New York Notebook, N-85-05-28

This notebook covers the periods May-July 1885 and January 1886. Most of the entries are by Montgomery Waddell. There are also a few entries by Edison. The book contains the results of tests by Waddell on secondary batteries for miners' lamps, along with drawings by Edison of electric power distribution systems. The spine is labeled "24." There are 308 numbered pages.

Blank pages not filmed: 232-235, 266-308.

x E-172 N-85·05·28

No 14987
ARTHUR & BONNELL
MANUFACTURERS
25 CEDAR STREET
New York

25th May 1885

No.

Continuation of experiments on Secondary Battery for Wenies Lamp.

W. Hardaker

Internal resist. of cell of tin robs, — (exposed surface of anode = 1.2 sq in.)

Solution 50 grms. Lime Sulphate
50 " Aqua. Ammonia of Iron
100 " Water.

Resist. Cell & Battery = 7.2 ohms

$$\frac{d}{d_1} = \frac{5+13+7}{5+13}.$$

$$\frac{76}{26} = \frac{7.2+7}{7.2} \; ; \; \frac{50}{46} = \frac{7}{7.2}$$

$\therefore$ 7 = 5 ohms, before charging.

Time	Defl.	Time	Defl.
11h 09' 00"	60 charge	Fresh Plates	
19' 00"	60 "	11h 59' 00"	60 charge
19'	disch	12h 09' 00"	60 "
10	150	09	3
20	120	10	140 disch
30	80	20	90
40	34	30	60
50	3 "	40	73
1.) 20	9	50	6.2
15	13	1.) 10	18
30	15	15	24
45	16	30	4
2.) 24 00	17	35	0
15	17	45	2
30	17	2.) 11' 00	2
3.) 22 00	17	12 00"	3
4.) 22 00	17		
5.) 24' 00"	17	Deposit of crystals	
6.) 25' 00"	16	on both plates	
7.) 26 00	16	Probably $ZnSO_4$	
8.) 27 00	16		
9.) 28 00"	16		
10.) 29 00	16		
12.) 31 00	16		
13.) 32 00	15		
14.) 33 00"	15		
15.) 34 00	15		
16.) 35 00	14		
18.) 37 00	14		
20.) 39 00	13		

Time	Defl.
1h 01 Pass	60 charge
11 "	60 "
11	150 disch
10	145
20	40
30	3
40	8
50	13
1.) 17 00	14
15	15
2.) 13 00	16
15	15
30	14
3.) 14 00	13
30	12
4.) 15 00	11
30	10
5.) 16 00	9
30	9
6.) 17 00	8
30	8
7.) 18 00	7
8.) 20 00	7
11.) 22 00	6
12.) 25 00	5

Deposit as before
of granular crystals
on platinum. Little on
the other elements

8 41 — 15 pounds 15 " 60 " — Lw 50 oz. com. alt of Fe } 25 55 100 — Hy. O — Lin & Lin.

1h 55' an. .60 charge
2h 05' an. .60 "
05' .5 .95 disch
10 .90
20 .81
30 .79
40 .76
50 .72
3) 09' an. .68
15 .59
30 .55
45 .47
2) 10' an. .42
15 .33
30 .22
45 .10
50 .6
3) 11' an. .3

3h 17' an. .60 ch
27 an. .60 "
27 h. 9 released
10 .76
20 .73
30 .62
40 .51
50 .80
1) 28' .26
15 .65
30 .58
45 .49
2) 29' an. .39
15 .26
30 .60
40 .5
45 .3
50 .2

8 41 — 10 pounds 10 " 50 " — Lw 50 oz. com. alt. } 100 100 100 — Hy. O — Lin & Lin. 7

2 55' an. .60 charge
3 05' an. .60 "
05' .5 .80 disch
10 .72
20 .58
30 .56
40 .51
50 .49
1) 06' an. .47
15 .45
30 .44
45 .42
2) 07' an. .39
15 .36
30 .34
3) 10' an. .33
30 .26
4) 09' an. .12
15 .5
30 .1

3h 20' an. .60 charge
30 an. .60 "
30 h. .70 disch
40 .68
50 .65
60 .62
70 .60
80 .57
3h 1) 30 .54
45 .52
50 .48
45 .45
2) 3h 30 .42
15 .40
30 .35
3) 33 an. .33
30 .30
4) 34 an. .26
15 .19
30 .11
45 .7
5) 55 an. .3

8

15 pumps Zn SO4
15 " Cu. sulphate
41 - 00 " 820

Zinc & Zinc

3h 57' 00" - 60 charge
4h 07 00" - 60 "

07 - 7 - 92 discharge
10 - 88
20 - 82
30 - 78
40 - 74
50 - 70
1) 08 - 00 - 66
15 - 59
30 - 52
45 - 47
2) 09 - 00 - 36
15 - 11
30 - 1

4h 12' 00" - 60 charge
30 00" - 60 "

08 - 6 - 85
15 - 80
30 - 87
30 - 84
40 - 80
50 - 77
1) 55 - 00 - 75
15 - 66
30 - 60
45 - 55
2) 20 - 00 - 49
15 - 29
30 - 16
40 - 4
50 - 0

10 pumps Zn SO4
" Cu. sulphate
41 - 15 " 00 " Acid

Zinc & Zinc

9

4h 53' 00" - 60 charge
5h 03' 00" - 60 "
03 - 5 - 90 discharge
15 - 84
25 - 71
40 - 66
50 - 63
55 - 60
1) 02 - 00 - 57
15 - 52
30 - 48
45 - 45
3) 05 - 00 - 42
15 - 35
30 - 35
3) 06 - 00 - 29
30 - 13
40 - 4
45 - 0

5h 00' 00" 60 charge
15' 00" - "

15 - 6 - 92 discharge
20 - 71
30 - 76
35 - 73
40 - 70
45 - 66
1) 19 - 00 - 62
15 - 57
30 - 49
45 - 45
2) 20 - 00 - 42
15 - 40
30 - 35
3) 21 - 00 - 36
30 32
45 - 21
4) 22 - 00 - 9
15 - 1

29th Aug. 1885 — Li + Ei.

#41 (Receiving solution)

9h	48' 00"	60 charge
	55 00	60 "
	57	60 disch.
	10	75
	20	76
	30	76
	40	70
	50	65
1)	59	60
	15	53
	30	48
	45	44
3)	00	42
	15	41
	30	40
	45	38
5)	01	35
	15	33
	30	32
7)	02	30
	30	27
9)	03	26
	30	20
	40	13
	45	10
1)	04	7
	15	4
	30	3

10h	13' 00"	60 charge
	23 00	60 "
	23	80 disch.
	10	77
	20	76
	30	75
	40	74
	50	71
1)	24	67
	15	59
	30	53
	45	48
3)	25	45
	15	41
	30	39
	45	37
5)	26	35
	15	34
	30	33
7)	27	31
	30	28
9)	28	26
	30	23
	40	19
	50	15
1)	29	13
	10	10
	20	7
	30	5
3)	30	4

Li + Ei. 11

#41 — Same as (Return)

10h	41' 00"	60 charge
	51' 00"	60 "
	51	70 disch.
	10	76
	20	76
	30	74
	40	68
	50	63
1)	52	59
	15	54
	30	49
	45	47
3)	53	45
	15	43
	30	41
	45	39
5)	54	37
	15	35
	30	33
7)	55	30
	30	26
9)	56	20
	10	12
	30	8
	30	6
	40	5
	50	4
1)	57	3
	10	2

11h	00	60 charge
	15	"
	15	80
	10	76
	20	75
	30	74
	40	73
	50	70
1)	11	65
	15	58
	30	52
	45	47
3)	12	46
	15	42
	30	40
	45	38
5)	13	36
	15	35
	30	33
	45	31
	30	27
5)	15	24
	15	20
	30	16
	45	13
	00	10
	15	7
	30	6
	45	5
7)	17	40
	30	4
	45	3

(D)

Lin & Lin

#41 - Same solution

11h	39'	00"	-60	charge	
	49'	00"	-60	"	
	49'	-	6	86	disch.
			10	83	
			20	80	
			30	78	
			40	74	
			50	67	
1)	50'	--	00	62	
			15	58	
			30	55	
			45	52	
2)	51'	--	00	49	
			15	47	
			30	45	
			45	42	
3)	52'	--	00	40	
			15	38	
			30	36	
4)	53'	--	00	32	
			15	22	
			30	15	
			45	10	
5)	54'	--	00	6	
			15	1	
			30	4	

11h	59'	00"	-60	ch.	
12h	09'	00"	-60	"	
	09	- 8	82	disch.	
			80		
			60		
			80		
			70		
			72		
			70		
1)	10.	-00	71		
		15	64		
		30	57		
		45	51		
2)	11'	-- 00	49		
		15	46		
		30	44		
		45	42		
3)	12	--	40		
		30	37		
4)	13'	-- 00	32		
		30	23		
		45	15		
5)	13	-- 00	12		
		15	9		
		30	7		
		45	5		
	14'	-- 00	3		

Lin & Lin.

#41 (Same solution)

14h	39'	00"	-60	charge	
	49'	00"	-60	"	
	49.	- 8	76	discharge	
			60	75	
			70	70	
			80	70	
			40	65	
			50	55	
1)	50'	-- 00	53		
		15	49		
		30	47		
		45	45		
2)	51	-- 00	42		
		15	40		
		30	38		
		45	36		
3)	52	-- 00	35		
		15	33		
		30	31		
4)	53'	00	29		
		30	27		
5)	54'	00	25		
		30	22		
6)	55'	00	19		
		10	15		
		20	10		
		30	5		
		45	6		
7)	56'	-- 00	4		

1h	09'	00"	-60	charge	
	19'	00"	-60		
	19	- 4	90	discharge	
		10	76		
		20	71		
		30	70		
		40	65		
		50	60		
1)	50'	-- 00	54		
		15	49		
		30	46		
		45	42		
2)	1h	1' -- 00	40		
		15	37		
		30	35		
		45	30		
3)	20'	-- 00	33		
		15	32		
		30	30		
4)	21'	-- 00	27		
		30	26		
5)	22'	-- 00	25		
		30	23		
6)	23'	-- 00	20		
		30	15		
7)	24	-- 00	12		
		15	7		
		30	6		
		45	5		
8)	25'	00	4		

41 (Same Solution)

Li × Li

0h	35' 00"	60 charge	2h	51' 00"	60 charge
	30' 00"	60 "	3h	01' 00"	60 "
	30	2.75 discb		01'	6.90 discharge
	10	.72		10	.76
	20	.71		20	.75 "
	30	.70 "		30	.72 "
	40	.68		40	.68
	50	.61		50	.64
1)	39' 00	.56	4)	02' 00	.60
	15	.52		15	.54
	30	.50		30	.48
	45	.46		45	.46
2)	40' 00	.45 "	5)	03' 00	.40
	15	.45		15	.41
	30	.44		30	.39
3)	41' 00	.39	6)	04' 00	.36
	30	.34		30	.32
4)	42' 00	.30	7)	05' 00	.30
	30	.25		30	.27
5)	43' 00	.26 "	8)	06' 00	.24
	30	.24		30	.20
6)	44' 00	.22		45	.12
	30	.18	9)	07' 00	.9
	45	.11		15	.6
7.)	45' 00	.7		30	.5
	15	.4		45	.4
	30	.4			

41 Same solution – same plate

Li × Li

3h	37h charge		4h	2h 00' 00"	60 charge
	35' 00"	60 charge		34' 00"	60 "
	55' 00"	60 "		34	2.00 disch
	55	6.20 discb		10	.74
	10	.73		20	.67 "
	20	.70		30	.65
	30	.61		40	.61
	40	.65		50	.58
	50	.62	1)	55' 00	.54
1)	56' 00	.59		15	.52
	15	.53		30	.47
	30	.50		45	.43
	45	.48	2)	36 00	.22
2)	57' 00	.45		15	.40
	15	.42		30	.39
	30	.40	3)	37 00	.37
3)	58' 00	.37		30	.34
	30	.34	4	38 00	.29
4)	59' 00	.30		15	.25
	30	.24		30	.23
5)	60 00	[illegible]		45	.18
	10	.12	3)	39 00	.12
	20	.9		15	.8
	30	.6		30	.5
	40	.4		45	.3

#41 5th 5-7 charge.

5h 09' 00" - 60 charge
19' 00" - 60 "
19' - 6 - 92 discharge
10 - 81
20 - 66
30 - 63
40 - 60 "
50 - 57
1) 40' - 00 - 54
15 - 50
30 - 47
45 - 45
2) 31' - 00 - 42
15 - 38
30 - 36
45 - 35
3) 22' - 00 - 32
15 - 31
30 - 29
4) 23' - 00 - 26
30 - 19
45 - 12
5) 24 - 00 - 8
15 - 5
30 - 4
6) 25 - 00 - 3

#41 6th charge.

9h 19' 00 - 60 charge
29' 00 - 60 "
29 - - 4 - 7 discharge
10 - 62
20 - 52
30 - 49
40 - 47
50 - 44
1) 30' - 00 - 43
15 - 40
30 - 37
45 - 35
2) 31 - 00 - 34
15 - 32
30 - 30
3) 32 - - 00 - 26
30 - 23
4) 33 - 00 - 20
30 - - 19
5) 34' - 00 - 17
30 - 16
6) 35' - 00 - 12
30 - - 7
7) 36' - 00 - 5
45 - 5
8) 36' - 00 - 1

7th Charge

2h 09' 00 - 60 charge
19' 00" - 60 "
19' - 4 - 100 discharge.
10 - 82
20 - 70
30 - 64
40 - 62
1) 18' - 00 - 60
15 - 57
30 - 51
45 - 48
2) 19' - 00 - 42
15 - 40
30 - 36
3) 20 - - 00 - 30
4) 21 - 30 - 28
00 - 26
5) 22 - 30 - 23
00 - 19
30 - 15
6) 23' - 45 - 11
00 - 6
15 - 5
30 - 3

#41 (5th mins -- Lucas
5th " -- Cap. Astry (Dec)
(6th " -- Cyclo

Lat. & Lo.

3h	31	00	60 charge
	31	00	60
	31	6	Yodrech.
		10	64
		20	56
		30	52
		40	51
		50	50
1)	32	00	49
		10	47
		30	45
		40	42
2)	33	00	39
		10	37
		30	33
		40	31
3)	34	00	25
		10	25
		30	23
4)	35	00	21
		30	20
5)	36	00	17
		30	15
6)	37	00	14
		30	16
7)	38	00	15
		30	14
8)	39	00	12
		30	10
9)	40	00	8
		30	5
10)	41	00	3

3h	44	00	60 charge
	54	00	55
	54	00	40
	54	5	discharge
		10	47
		20	46
		30	45
		40	44
		50	44
1)	55	00	43
		10	41
		30	39
2)	56	00	36
		20	33
		15	30
		30	[illegible]
		45	25
3)	57	00	24
		15	23
4)	58	00	22
		30	21
5)	59	00	19
		30	17
6)	00	00	15
		30	10
7)	01	00	7
		45	2

#41 - Same proportion as last.

Lat. & Lo. 19

4h	39	00	60 charge
	49	00	60
	49	5	disel
		10	53
		20	45
		30	43
		40	42
1)	50	00	41
		30	39
		15	37
		30	35
		45	33
2)	51	00	31
		15	25
		30	26
3)	52	00	23
		30	21
		15	20
4)	53	30	19
		00	18
5)	54	30	17
		00	16
6)	55	30	15
		00	14
7)	56	30	13
		00	11
8)	57	30	10
		00	9
9)	58	30	7
		00	5
10)	59	30	4
		00	3

5h	10	00	60 charge
	20	00	
	20		discharge
		10	
		20	
		30	
		40	
		50	
		00	
		15	
		30	
		45	
		00	
		15	
		30	

Chronometer
Lecture 20 min

3rd of June 1885

41. 3rd charge of prisoner (3 bells in succ)

9h	35 am	60	charge
	45 "	60	"
	45	72	discharge
	10	64	
	20	53	
	30	47	
	40	44	
	50	41	
1)	46	60	39
	15	36	
	30	34	
	45	32	
2)	47	60	30
	15	28	
	30	26	
3)	48	60	22
		30	20
4)	49	60	18
		30	17
5)	50	60	16
6)	51	60	15
		30	14
7)	52	60	13
		30	12
8)	53	60	12
		30	12
9)	54	60	11
10)	55	60	11
11)	56	60	10
12)	57	60	8
13)	58	60	5

3rd charge

10h	00	60	charge
	15	60	"
	15	70	discharge
	20	65	
	30	62	
	40	55	
	50	36	
1)	16	60	34
	15	32	
	30	30	
	45	27	
2)	17	60	25
	15	23	
	30	22	
	45	21	
3)	18	60	20
	15	19	
	30	18	
4)	19	60	17
		30	16
5)	20	60	16
6)	21	60	14
7)	22	60	13
8)	23	60	12
9)	24	60	11
10)	25	60	10
11)	26	60	8
12)	27	60	7
13)	28	30	5
14)	29	60	4
		30	3

4th charge

10h	30	60	charge
	45	60	"
	45	95	discharge
	10	72	
	20	40	
	30	37	
	40	35	
	50	32	
1)	49	60	30
	15	27	
	30	24	
	45	21	
2)	50	60	19
	15	19	
	30	18	
3)	51	60	16
		30	15
4)	52	60	14
		30	13
5)	53	60	13
		30	12
6)	54	60	11
7)	55	60	10
8)	56	60	9
9)	57	60	9
10)	58	60	8
11)	59	60	5
12)	00	60	7
13)	01	60	6
14)	02	60	4
		30	3

5th charge

11h	35	60	charge
	45	60	"
	45	80	discharge
	10	70	
	20	60	
	30	51	
	40	42	
	50	29	
1)	46	60	26
	15	21	
	30	17	
	45	15	
2)	47	60	15
	15	14	
	30	13	
3)	48	60	12
4)	49	60	12
5)	50	60	11
6)	51	60	10
7)	52	60	9
8)	53	60	9
9)	54	60	8
10)	55	60	7
11)	56	60	5
12)	57	60	3

#41 – 5th charge –		4th charge	
4h	49' ao" – 60 charge	3h	21' ao" – 60 charge
	59' ao – 60 "		31' ao" – 60 "
	59' – 5 10 ds. charge		31' – – 6 90 discharge
	10. 68 "		10. 67
	20. 75		20. 43
	30. 35		30. 36
	40. 30		40. 32
5)	– – 00 50. 26		50. 28
	00. 23	1)	– 32' – – 00. – 35
	15. 19		15. 21
	30. 16		30. 18
	45. 14		45. 15
2)	– – 01 – – 00. 11	2)	33' – – 00 – 14
	15 – – 10		15 – 13
	30 – – 9		30 – – 13
3)	– – 02 – – 00 – – 9	3)	34' – – 00 – 12
	30 – – 9		30 – – 12
4)	03' – – 00 – – 8	4)	35' – – 00 – 12
	30 – – 8		30 – – 11
5)	04' – 00 – 8	5)	36 – 00 – 11
	30 – – 8		30 – 10
6)	05' – 00 – 7	6)	37' – 00 – 10
7)	06 – 00' 8		30 – – 9
8)	07' – 00 – 7	7)	38' – 00 – 8
9)	08' – 00 – 7		30 – 8
10)	09' – 00 – 6	8)	39' – 00 – 7
11)	10 – 00 – 5	9)	40 – 00 – 6
	30 – 3	10)	41' 00 – 4
			30 3

#41 – 5th charge.		4th charge	
3h	38' ao' – – 60 charge	4h	09' ao" – 60 charge
	48' ao" – 60 "		19' ao – 60 "
	48 – – 5 5 discharge		19' – – 6 90 discharge
	10 – 78		10 – 77
	20 – 62		20 – 46
	30 – 47		30 – 35
	40 – 33		40 – 32
	50 – 30		50 – 27
1)	49 – – 00 – 27	1)	20' – – 00 – 23
	15 – 23		15 – 19
	30 – 19		30 – 16
	45 – 16		45 – 14
2)	50 – – 00 – 13	2)	21 – 00 – 14
	15 – 11		15 – 12
	30 – 9		30 – 12
3)	51 – – 00 – 9	3)	22 – – 00 – 11
	15 – 8		30 – 11
	30 – 8	4)	23 – – 00 – 10
4)	52 – – 00 – 8		30 – 10
	30 – 8	5)	24' – 00 – 10
5)	53 – – 00 – 7	6)	25' – 00 – 9
	30 – 7	7)	26 – 00 – 8
6)	54' – 00 – 7	8)	27' – 00 – 7
	30 – 6		30 – 6
7)	55' – 00 – 6	9)	28 – 00" – 5
8)	56 – – 00 – 6		30 – 5
	30 – 5	10)	29 – 00" – 4
9)	57' 00 – 4		
10	58' 00 – 3		
	15 – 3		

11th charge

9h 12' 00" - 60 charge
30 00" - 60 "
30' 00" - 20 discharge
10 - 84
20 - 58
30 - 42
40 - 37
50 - 34
1) 23' - 00 - 30
15 - 25
30 - 20
45 - 15
2) 24' - 00 - 13
15 - 12
3) 25' - 00 - 11
30 - 10
4) 26' - 00 - 7
30 - 6
5) 27' - 00 - 6
30 - 6
6) 28 - 00 - 5
7) 29' 30 - 5
8) 30' 00 - 4
9) 31' 00 - 3

10th charge

3h 12' 00" - 60 charge
30 00" - 60 "
22' - 6 - 20 discharge
10 - 76
20 - 55
30 - 44
40 - 35
50 - 34
1) 23' 00 - 25
15 - 22
30 - 19
45 - 16
2) 24' 00 - 14
15 - 12
30 - 11
3) 25 00 - 9
30 - 9
4) 26' 00 - 8
30 - 7
5) 27' 00 - 7
30 - 7
6) 28' 00 - 6
30 - 6
7) 29' 00 - 6
30 - 5
8) 30' 00 - 5
9) 31' 00 - 4

9th charge

3h 35' 00" - 20 charge
45' 00" - 60 "
45 - 6 - 105 disch.
10 - 90
20 - 62
30 - 46
40 - 37
50 - 32
1) 26' - 00 - 23
15 - 23
30 - 25
45 - 16
2) 27' - 00 - 14
15 - 13
3) 28 - 00 - 12
30 - 11
4) 29' - 00 - 10
5) 30' 00 - 10
6) 31' 00 - 9
7) 32 - 00 - 8
8) 33' - 00 - 7
9) 34' 00 - 6

11th charge

4h 00' 00" - 60 charge
15' 00" - 60 "
16 - 4 - 120 disch.
10 - 90
20 - 73
30 - 63
40 - 54
50 - 48
1) 17' - 00 - 21
15 - 21
30 - 18
45 - 16
2) 18' - 00 - 15
15 - 14
3) 19' 00 - 13
30 - 12
4) 20 - 00 - 11
30 - 10
5) 21' 00 - 10
6) 22' 00 - 9
7) 23' 00 - 7
8) 24 00 - 6
9) 25' 00 - 6
10) 26 00 - 5

4th June 1875 — Silver & Silver

3 – Red-of-lead

Cell	Time	Deflection	Remarks
2c left hiff	3h 30' Pick	-60 charge	No gas given off. Plates coated with a brilliant red but easily detached
	40' 00"	-60 "	
	40'	-61 discharge	
		10 -1 "	
		20 -0	
		30	
		40	

4 – Nitro-prussiate of soda.

Cell	Time	Deflection	Remarks
not primary	2h 50' 00"	-60 charge	Internal part of cell uncoated, separately with charge – 4 letting cells put in series.
	53' 00"	-40 "	
	2h 00' 00"	-37 "	
	00	-9 -14 discl.	
		10 -6	
		20 -15 "	
		30 -12	
		40 -8	
		50 -6	
	01'	-00 -4	Positive plate coating easily scraped off.
		15 -4	
		30 -3	
		45 -3	

60 divisions on 1/10 ohm coil of galvanometer correspond to 0.015 160 = 0.1 ampere

5 – Nitro-ferro. of Na & Pb. ac. 3.6

Cell	Time	Deflection	Remarks
not primary	3h 13' 00"	-60 charge	Greyish coating as before.
	15' 00"	-50 "	
	17' 00"	-35 "	
	23' 00"	-36 "	
	23'	-4 -14 discl.	
		00 -5 "	
		20 -2	
		30 -1 "	

6 – Ferrocyanide of potassium

Cell	Time	Deflection	Remarks
not primary	3h 26' 00"	-60 charge	Gas formed freely. Positive plate formed. Solution becomes opaque. Both plates blackened on discharge.
	36 00"	-60 "	
	36	-3 -10 discl.	
		10 -3	
		20 -14	
		30 -17 "	
		40 -14	
		50 -13	
	4h 34'	-00 -12	
		15 -11	
		20 -10	
	2h 35'	-00 -8	
		30 -7	
	3h 39'	00 -6	
		30 -5	
	4h 40'	00 -4	

9 - Manganese chloride

ag & ag

Not giving	3h	42' 00" -- 60 change	Gas given off
		54 00" -- 60 "	liquidly.
		50' -- --	
		10 -- 150 decol	
		20 -- 80	
		30 -- 20	
		40 -- 12	
		50 -- 8	
		55 -- 60 -- 6	
		15 -- 4	
		30 -- 4	

8 - Phosph. acid

Not giving	4h	04' 00" -- 60 ch	White cloud
		19 00" -- 60 "	immediately forms
		19 -- 4 300 decol	Pickes blackness
		10 -- 25	
		20 -- 9	
		30 -- 3	
		40 -- 2	
		50 -- 1	
		60 -- 1	

10. Phosph. acid. blac.

ag. & ag.

Not giving	4h	21' 00" -- 60 change	White cloudy
		31 00" -- 60 "	ppt. forms. ch
		31 -- --	
		10 -- 150 decol	Pickes blackness
		20 -- 52	
		30 -- 28	
		40 -- 19	
		50 -- 15	
		1) 32 -- 00 -- 12	
		15 -- 11	
		30 -- 10	
		45 -- 9	
		2) 33 -- 00 -- 8	
		30 -- 7	
		3) 34 -- 00 -- 6	
		30 -- 6	
		4) 35 00 -- 5	
		30 -- 5	
		5) 36 -- 00 -- 5	
		30 -- 4	

ag.ag.

#11 - Hydrogen ag. Benzam & Phag. Sl.			
Not primary	4"	49' 00" - 60 charge	Greenish white crystals on frosted plate.
		57' 00" - 60 "	
		57 - 3 - 15 dech	
		10 - 2	
		20 - 1	
		30 - 1	
		40 -	
#14 - Iodide - Cyanide			
Not primary	5-h	00' 00" - 60 charge	White p.p. primer
		10' 00" 60 "	
		20 - - -	
		10	
		20 - 10-0 dech	
		30 - 12-0	
		40 - 7-6 "	
		50 - 5-2	
	11'	- 00 - 4-2	
		10 - 3-0	
		20 - 2-0	
		30 - 1-6	
	12'	- 00 12	
		10 - 9	
		20 - 8	
	13'	- 00 - 6	
		30 - 4	

#15 - Boracic acid

ag.+ag.

Not primary. Plate covered with charge	5-h	17' 00" - 60 charge	White cloudy precip. primer
		27 00" 60 "	
		27 - 7 - 7 dech	
		10 - 6	
		20 - 4	
		30 - 4	
		40 - 3	
		50 - 2	
		60 -	

Friday, 8th June 1855

Blow Hitchen

#16 Strong Cast & Stee. &c.				
not pining	9h	25' 00"	60 charge	Hunter & Crawley
		30' 00"	60 "	Incorporated
		32' - 6	10 disol	immediately formed
			10 - 9	
			20 - 8 "	Rack strain on
			30 - 3	Casting on flatter,
			40 - 2	
			50 - 1 "	
#18 - Phosphate or Soda				
testing	9h	35' 00"	60 charge	Gas given off lightly
		40' 00"	60 "	
		45' - 3	10 disol	
			15 - 5	
			20 - 3	
			30 - 2	
			40 - 1	
#19 - Carbide of Soda				
testing 4 battery cells in series	9h	59' 00"	60 ch	Gas given off
		01' 00"	60 "	lightly
		02' 00"	60 "	
		09' 00"	25 "	Hunt clark formed
		09' - 6	32 "	
			10 - 9	
			20 - 7	
			30 - 4	
			40 - 3	
			50 - 2	

#20 - Acetic acid				
testing	10h	13' 00"	60 ch	Plates on hand
		14' 00"	60 "	
		30' -	10 "	
		23 - 00	7 "	Heavy fine ppt formed
		23 - 6	80 disol	
			10 - 75 "	
			20 - 55	
			30 - 35	
			40 - 26	
			50 - 20 "	
	1)	24 - 00	14	
			15 - 10	
			30 - 7 "	
			45 - 4	
			00 - 3	
#21 - Phosp. ac. Sl. + Acetic ac.				
testing	10h	27' 00"	60 charge	Gas given off
		37' 00"	60 "	lightly & battery
		37 - 7	100 disol	from Crawley ppt
			10 - 80 "	formed
			20 - 72	
			30 - 54	
			40 - 35	
			50 - 32	
	1)	38' - 00	25	
			15 - 19	
			30 - 14	
	2)	39' - 00	7 "	
	3)	40' - 00	4	

#23 – arsenious acid

ag x ag

Not persuing	10h 55' 00" – 60 ch.		Plates animated
	59 00" – 50 –		Heavy white
	11h 05 00" – 35 –		ppt. – front
	15 – 4 – 7 deck		5th
	10 – 6		Color changes.
	30 – 4		7 deck
	30 – 4		
	40 – 3		

#24 – Sulph. of Iron & Sulph. of Iron

Not persuing	11h 15' 00" – 60 change		White ppt persists
	55 00" – 60 "		Prussian plate
	28 – 2 – 150 deck		
	10 – 82		
	20 – 53		
	30 – 34		
	40 – 57 "		
	50 – 22		
	1) 29' – 00 – 28 "		
	30 – 13		
	2) 30' – 00 – 11 "		
	30 – 10 "		
	3) 31' – 00 – 9 "		
	4) 32' – 00 – 7 "		
	5) 33' – 00 – 7 "		
	34 – 00 – 6 "		

#25 – Oxalic acid

ag x ag

Nothing	11h 36' 00" – 60 ch.		Plates stained
	46 00" – 60 –		
	46 – 2 – 65		
	10 – 60		
	20 – 52		
	30 – 44		
	40 – 35		
	50 – 24		
	47' – 00 – 16		
	15 – 11		
	30 – 9		
	45' – 00 – 7		
	30 – 5		
	00 – 4		

#26 – Sulphates of Ceria & Lime

Not persuing	12h 01' 00" – 60 change		Heavy black precipitate.
	01' 00" – 60 "		
	11 – 00 –		
	10		
	20 – 150 deck		
	30 – 80		
	40 – 45 "		
	50 – 26		
	4) 12' – 00 – 28		
	15 – 22		
	30 – 15 "		
	2) 13' – 00 – 11		
	3) 14' – 00 – 9		
	4) 15' – 00 – 7 "		
	5) 16' – 00 – 5		

ag. & ag.

#27 – Oxalate of Am. & Pt. ac. Sl.

not priming	12h 44' P.M.	w. charge	Black cloud formed
	50 "	60 "	
	60 –	70 disch	
	10 –	15	
	20 –	7	
	30 –	4	
	40 –	3	

#28 – Pyro-gallic acid

not priming	1h 37'	w. " – 60 charge	Plates slightly stained
	49'	w. " – 60 "	
	49' –	3 – 6 disch	
	10	3	
	20	2	
	30	1	

#29 – Tannic acid

1st part	1h 52'	w. " – w. charge	Lathy mass formed
	2h 02'	w. " – 60 "	
	02'	3 – 12 disch	
	10 –	4	
	20 –	8	
	30 –	6	
	40 –	4	
	50 –	3	

ag. & ag. 37

#30 – Tannic acid & Pt. ac. Sl.

2d left	2h 13'	w. " – 60 charge	Plates blackened
	23'	w. " – 60 "	
	23 –	2 – 30 disch	
	10	46	
	20	19	
	30 –	12	
	40 –	9	
	50 –	8	
	2) 24' –	20 – 8	
	15 –	7	
	30 –	6	
	2) 25' –	20 – 6	
	30 –	5	

#31 – Glycin & sodium chloride

Nothing	2h 25'	w. " – 42 ch	Soon from neg. stain only
	35'	w. " – 35 "	
	35 –	– disch	
	10	3	
	20	2	
	30	0	

#32 – Glycerine & sulph. ac. ag & ag

Nothing 8h	45' wo" – 60 chap.	Gas freely
	55 wo" – 60 "	passing off.
	55 – 6 – 40 dech	Hydrogen off
	10 – 52	forming
	20 – 73	
	30 – 58	
	40 – 73	
	50 – 11	
	56 – 00 – 10	
	15 – 8	
	30 – 7	
	00 – 6	

#33 – Glycerine & Ph. ac. Sl.

Nothing 3h	01' wo" – 60 ch	Gas freely
	03 wo" – 56 "	given off
	11 wo" –	
	11 – – 45	
	10 – 4	
	20 – 3	
	30 – 2	
	40 – 1	

#34 – Oxalic acid ag & fig

Nothing 3h	32' wo" – 60 ch.	Plates blacken
	32 wo" – 60 "	
	32 – 7 – 50 dech	
	10 – 110	
	20 – 74	
	30 – 60	
	40 – 38	
	50 – 33	
	33 – 00 – 27	
	15 – 10	
	30 – 7	
	45 – 5	

#35 – Oxalic acid & Phosp. ac. Sl.

Nothing 3h	36' wo" – 60 chap.	
	46 wo" – 60 "	Brown gas
	46 – – – dech	forming
	10 – 150	
	20 – 30	
	30 – 18	
	40 – 12	
	50 – 10	
	47 – 00 – 9	
	15 – 7	
	30 – 6	
	45 – 6	
	48 00 – 5	

#36 – Tartric acid g. & g.

nothing	4h 27' 00" – 60 charge		Light ppt.
	37' 00" – 60 "		
	37' – 5	76 disch	
	10	55	
	20	41 "	
	30	20	
	40	14 "	
	50	11	
	b) 38' – 00	10	
	15	9	
	30	8	
	45	7 "	
	b) 39' – 00	6	

#37 – Tartric acid & K. ac. tl.

nothing	4h 41' 00" – 60 charge		white cloudy precip
	51' 00" – 60 "		
	51' – 5	90 disch.	
	10	55	
	20	54 "	
	30	24	
	40	14	
	50	11	
	52' – 00	9 "	
	15	7	
	30	6	
	45	5 "	
	53' – 00	5	

#35 alum

nothing	5h 25' 00" – 60 charge		Grey coating on plates
	26' 00" – 60 "		
	26' –	disch	
	14	150	
	20	35	
	30	20	
	40	14	
	50	11	
	b) 27' – 00	10 "	
	15	8	
	30	7	
	45	5	
	00	4	

Saturday 4 June 55

#39 – alum & Pb. acc. – 9g + 9g

Acc	time	dept.	Remarks
not firing	9h 11' 00" – 60 charge		Hitch p.p.
	21' 00" – 60 "		
	21' – – 4	50 discl	Plates slightly blackened
		10 – 88	
		20 – 66 "	
		30 – 43 "	
		40 – 37 "	
		50 – 33	
	1) 22' – 00	– 31	
		15 – 26	
		30 – 23 "	
		45 – 20	
	2) 23' – 00	– 20	
		30 – 15	
	3) 24' – 00	– 12 "	
		30 – 10	
	4) 25' – 00	– 8 "	
		00 – 7	
	5) 26 00	– 6	
		30 – 5	
	6) 27' 00	– 4 "	
		30 – 4	
	7) 28' 00	– 3	

#40 – alum & Benzyl acetate. 9g + 9g

Nothing	9h 39' 00" – 60 charge		Plates blackened
	49' 00" – 60 "		Hitch p.p.
	49' – –		Gas given off slightly
		10 – 145 discl	
		20 – 28	
		30 – 14 "	
		40 – 10	
		50 – 8	
		00 – 6	
		15 – 4	

#42 – Bisacetate of Benzyl & Lime acetate

1° left.	10h 13' 00" – 60 charge		Heavy fine white p.p. [illegible] – [illegible]
	13' 00" – 60 "		
	13' – – discl		
		13 – 150 "	
		20 – 105 "	
		30 – 84 "	
		40 – 65 "	
		50 – 56	
	1) 14' – 00	– 48 "	
		15 – 42	
		30 – 37	
	2) 15' – 00	– 28	
		30 – 22	
	3) 16' – 00	– 17	
	4) 17' 00	– 14	
	5) 18' 00	– 12	
	6) 19 00	– 11	
	7) 21 00	– 10	
	8) 24 00	– 8	

12) 25 00" – 7
14) 27 00" – 5
17) 30 00 – 4

cf & aj.

#44 – Barium chloride

Nothing – 10h	34' aw – 60 charge		Picks stones, too lightly from off
	44' aw – 60 "		
	44 – 3 – 12 click		
	10 – 3		
	20 – 1		
	30 – 0		

#45 – Barium ferrocyanide chloride

Nothing 10h	46' aw – 60 charge		Picks more lightly than rest
	56 – aw – 60 "		
	56 – – – click		
	10 –		
	20 –		
	30 –		
	40 –		
	50 – 15 – 0		
1)	57' – 60 – 15		
	15 – 28		
	30 – 11		
	45 – 8		
	58 – 60 – 6		
	15 – 4		
	30 – 4		

cf & aj

#46 – Sulph. of Barium

10 right	11h 09' aw – 60 charge		Black deposit
	19 aw – 60 "		
	19' – – 10 – 140 click		
	20 – 64		
	30 – 38		
	40 – 28		
	50 – 23		
	1) 20' – 60 – 19		
	10 – 16		
	30 – 14		
	2.) 21' – 60 – 11		
	3.) 22' 60 – 8		
	30 – 7		
	4.) 23' 60 – 6		

#30 – Carbonate of Potassium

Nothing	4h 25' aw – 60 charge		Picks p.p.
	31 aw – 60 "		
	31 – 3 – 10 click		
	10 – 4		
	20 – 2		
	30 – 1		
	40 – 1		
	50 – 1		

#57 – Bicentrocle of Patroclus

Nothing	11h 39' 00"	60 charge	Goes lightly from off
	39' 00"	60 "	
	39'	4 11 disch	
		10 6	
		20 4	
		30 3	
		40 2	

#58 – Sulphide of Patroclus

Nothing	11h 49' 00"	60 charge	Goes freely from off
	59' 00"	60 "	
	59'	7 31 disch	
		10 26	
		20 17 "	Brown fog –
		30 12	
		40 11	
		50 11	
	1) 00' 00"	11	
		15 10	
		30 9	
	2) 01' 00"	8	
		30 7	
	3) 02' 00"	6	
		30 5	
	4) 03' 00"	4	

#53 – Bisceptl. of Patroclus

Nothing	12h 09' 00"	60 charge	Quite freely.
	19' 00"	60 "	
	19'	6 55 disch	Plates strong
		10 55	
		20 37	
		30 20	
		40 14	
		50 11	
	1) 20' 00"	10	
		15 8	
		30 7	
	2) 21' 00"	6	
		30 5	

#54 – Binimide of Patroclus

Nothing	12h 33' 00"	60 charge	Plates blacken immediately
	33' 00"	60 "	
	33'	3 44 disch	
		10 3	
		20 2	
		30 1	
		40 0	

#55 – Permanganate of Potash

ag & aq

Not primary	1h 36' 20" – 60 charge	Black deposit
	46' 20" – 60 "	
	46' – 2 41 disch	
	10 – 26	
	20 – 20 "	
	30 – 17	
	40 – 15	
	50 – 13	
	2) 47' – 10 – 12	
	15 – 10	
	30 – 9	
	3) 45' – 00 – 8	
	30 – 6	
	3) 49' 00 – 5	

#56 – Sulpho-cyanide of Potash.

Nothing	1h 51' 20" – 60 charge	No gas given
	1h 01' 20" – 60 "	
	01' – 3 – 20 disch	off
	10 – 5	
	20 – 3	
	30 – 2	
	40 – 1	
	50 – 0	

#57 – Ferro-cyanide of Potash

ag & aq

Nothing	1h 04' 20" – 60 charge	Gas given off
	14' 20" – 60 "	from neg. plate
	14' – 3 – 6 disch	
	10 – 3	
	20 – 1 "	
	30 – 0	

#58 – Hyposulphide of Potash.

Nothing	1h 06' 20" – 60 charge	Black cloudy
	26' 20" – 60 "	precipitate
	26' – 4 50 disch	
	10 – 37	
	20 – 16 "	
	30 – 8	
	40 – 4	
	50 – 2	

#59 – Arsenite of Potash.

Nothing	1h 25' 20" – 60 charge	Brown coating on
	35' 20" – 60 "	positive plate
	35' – 3 – 24 disch	
	10 – 11	
	20 – 7	
	30 – 4	
	40 – 2	
	50 – 1	

#60 – arsenide of Potassa Fluid of Sp. Gr.

nothing	1h	45'	av. – 60 charge	Plates immediately blackened. Gas freely given off.
		55'	av. – 60 "	
		55'	– 3 – 20 disch	
			10 – 16	
			20 – 12	
			30 – 10	
			40 – 9	
	1)	56'	– 60 – 8	
			50 – 7	
			15 – 5	
			30 – 14	
	2)	57'	60 – 3	

#2 – Red Fluid with flakes of Nickle.

Cell	Time	Defl.	Remarks
2° left.	9h	43' av. – 60 charge	Green precipitate appears to be formed.
		53 av. – 60 "	
		53 – 3 – 4 discharge	
		10 – 4 "	
		20 – 4 "	
		30 – 3	
		40 – 3	

#4 – Nitro-prussiate of Sodium.

nothing	9h	59' av. – 60 charge	Yellow spongy deposit on positive plate.
	10h	09' av. – 0 "	
		09 – 2 – 9 disch	
		10 – 2 "	
		20 – 2 "	
		30 1	

#5 – Nitro-prusside of Na & Pb. ac. Cb

nothing	10h	09' av. – 60 charge	Some precip. also present.
		19' av. – 60 "	
		19' – 4 – 4 disch	test.
		10 – 3 "	
		20 – 1	
		30 – 0	

#3 – Hyposulphite of Soda.

Nothing	10h 23' av" – 60 chge		Plates blackened
	33' av" – 60 "		Black precipitate
	33' – – 5	12 disch.	
		10	7
		20	3
		30	2
		40	1

#1 – Iodine. Iron Iodide.

Nothing	10h 35' av" – 60 ch		Goes freely from both plates,
	45' av" – 60 "		
	45' – – 3	4 disch.	
		10	0
		20	0
		30	

#6 – Ammonium Sulphide.

Nothing	10h 53' av" – 60 ch.		
	11h 03 av" – 60 "		
	03 – 5	25 disch	Black stain on negative plate after discharge,
		10	10 "
		20	10 "
		30	7
		40	5
		50	4
	0a –	00	4
		15	3

#7 – Ammonium Chloride.

Nothing	11h 13' av" – 60 chge		Goes from negative plates
	33' av" – 60 "		
	33 – – 7	19 disch	Black flaky precip.
		10	17
		20	9 "
		30	7 "
		40	5 "
		50	4
		00	4
		15	3

#8 Phosph. Ac.

1° Left	11h 30' av" – 60 chge		Solution turned a greenish color. Black coloration on plates,
	40' av" – 60 "		
	40 – – 6	4 disch	
		10	1
		20	4 Left
		30	6
		40	5
		50	4
		00	3
		15	3
		30	2

#9 "B" Hemp & Vinic Sulphates. Ni & Ni

Nothing	11h 44' 00"	60 charge	very little pre
	54' 00"	60 "	
	54	76 disch	
	10	41 "	
	20	32	
	30	29	
	40	28	
	50	25	
	1) 55'	00	27
	15	26	
	20	25	
	45	24	
	2) 56'	00	23
	30	22	
	3) 57	00	22
	4) 58'	00"	21
	5) 59'	00"	20
	12h 6.0'	00"	19
	7) 01	00"	19
	8) 02'	00"	18
	10) 05	00"	15
	15) 09	00"	5

#10 Liberal Prep. &c. Ni & Ni

1° spot	12h 33' 00"	60 charge	Water clouds precipitate
	33' 00"	60 "	
	33	16 disch	
	10	7	
	20	5	
	30	3	
	40	2	

#11 Hydrocor. Benzoin & Pk. &c. Ni.

Nothing	12 41' 00"	60 charge	Greenish deposit on plates.
	51' 00"	60 "	
	51	40 disch	
	10	16	
	20	6	
	30	4	
	40	3	

#12 Tunic Cyanide

Nothing	2h 07' 00"	60 charge	Gas free from well plates.
	17' 00"	60 "	
	17	25 disch	
	10	17	
	20	15	
	30	15	
	40	15	
	1) 50	00	15
	60	12	
	2) 14	00	11
	30	7	
	3) 20	00	3

Ni & Ni

#15 – Benzoic acid			
Nothing	2h 28' av" – 50 charge 33' av" – 55 " 35 – – 3-4 disch 10 – 3 20 – 3 30 – 2		Gas from neg. plate.
#16 – Mercy chloride + Ph. ac. Sol.			
1° right	2h 35' av" – 60 charge 45' av" – 60 " 45 – – 6-14 discharge 10 – 5 20 – 3 30 – 1		Gas from neg. plate.
#17 – Phenolsulphonic acid			
Nothing	2h 54' av" – 60 charge 3h 04' av" – 60 " 04 – – 2-5 disch 10 – 3 20 – 1 30 – 0		Gas freely from both plates.

Ni & Ni

#19 – Acetate of soda			
Nothing	3h 06' av" – 60 charge 16 av" – 60 " 16 – – 4-20 disch 10 – 7 20 4 30 – 2 40 – 1		Very little. [illegible]
#20 – Acetic acid			
Nothing	3h 22' av" – 60 charge 33 av" – 60 " 33 – – – disch 10 – 1 20 – 1 30 – 0		Gas freely from neg. plate.
#21 – Acetic ac. + Ph. ac. Sol.			
Nothing	3h 37' av" – 60 charge 47 – av" – 60 47 – – 5-40 disch 10 – 22 20 – 7 30 – 5 40 – 5 50 – 4 48 – – 00 – 3		Plates stained black

#23 – Arsenious acid

Nothing

3h	57'	aw	53 charge
4h	01	aw	48 "
	01		4 discs
	10		3 "
	20		2
	30		2
	40		1 "

See min ff. 61–66

#24 – Lime & Iron Sulphates

Nothing

4h	03'	aw	60 charge
	10'	aw	60 "
	13'		60 discs
	10		60
	20		35 "
	30		34
	40		34
1)	14'	aw	33
		30	33
2)	15'	aw	32
		30	32
3)	16'	aw	31 "
		30	31
4)	17'	aw	30
		30	29
5)	18'	aw	27
6)	19'	aw	24
7)	20'	aw	20
		30	11
8)	21	aw	6
		30	3

Colors darkened

#25 – Citric acid

Nothing

4h	25'	aw	60 charge
	35	aw	60 "
	35		11 discs
	10		9 "
	20		7
	30		6
	40		6
	50		5
	36'	aw	5
	15		5
	30		4

very little action

#26 – Sulphates of Ammon + Lime

Nothing

4h	32'	aw	60 charge
	48	aw	60 "
	48		60 discs
	10		36
	20		32 "
	30		29
	40		27
	50		25
1)	49	aw	24
		15	22
		30	21
2)	50'	aw	20
3)	51'	aw	19
4)	52'	aw	17
5)	53'	aw	17
6)	56	aw	15
7)	59	aw	13
8)	01	aw	12

Very depressed on plates.

Ni & Ni

#27 – Acetic Acid Am. & Ph. Ac. Gl.

Nothing 5th 02' ow" – 60 charge
12' ow" – 60 "
12' – – 3 – 15 disch.
10 – 9 "
20 – 4 "
30 – 3
40 – 2

Gas slightly from negative plate.

#28 – Pyro-gallic acid

Nothing 5th 14' ow" – 53 charge
19' ow – 50 "
24' ow – 45 "
24' – 2 – 4 disch
10 – 3 "
20 – 2 "
30 – 2
40 – 1

Ni & Ni

#29 – Tannic acid 9th June 1885

10 light. 9th 08' ow" – 60 charge
20' ow" – 40 "
40' – – 3 – 7 disch.
10 – 2
20 – 2
30 – 2
40 – 1

Gas was in off slightly

#30 – Tannic acid & Ph. Ac. Gl.

2° light 9th 24' ow" – 60 charge
34' ow – 60 "
34' – – 4 – 14 disch
10 – 11 "
20 – 9 "
30 – 8 "
40 – 6
50 – 4
44 – – 50 – 4 "
15 – 3
30 – 3

negative plate was removed.

#31 – Glycerin & Sod. (acid)

Nothing 9th 43' ow" – 24 charge
53 ow" – 13 "
53 – – – disch
10 – 2
30 – 1 "
30 – 0 "

Gas from negative plate.

#32 – Glycerin & Sulphuric acids

Ni & Ni

1° right	9h	56' av. – .60 charge	See from negative plate
	10h	06' av. – .60 "	
		06 – – –	
		10 – .2 deceb.	
		20 – .1	

#34 – Oxalic acid

nothing	10h	21' av. – .60 charge	See negative
		31' av. – – "	
		31 – – .614 deceb	from 15
		10 – .7	
		20 – .3	

#33 – Glycerine & Ph. ac. Sl.

nothing	10h	35' av. – .50 Ch.
		45' av. – .50 "
		45 – – .3 – 9 deceb
		10 – .2
		20 – .1
		30 – .1
		40 – .0

Ni & Ni

#35 – Oxalic ac & Ph. ac. Sl.

nothing	10h	55' av. – .60 charge	
	11h	05' av. – .60 "	Photo developed immediately
		05 – – .6 – .24 deceb	
		10 – .22	
		20 – .22	
		30 – .22	
		40 – .23	
		50 – .24	
	1)	06' – av. – .20	
		15 – .23	
		30 – .22	
	2)	07' – av. – .20	
		30 – .17	
	3)	08' av. – .12	
		15 – .8	
		30 – .4	
		30 – .2	

#36 – Tartaric acid

nothing	11h	10' av. – .60 charge	
		20' av. – .60 "	Special color strip on neg. visible after discharge
		20 – – .3 – 3	
		10 – .8	
		20 – .6	
		30 – .5	
		40 – .5	
		50 – .4	

#37 – Petunia ac. & Ph. ac. Sl.

Ti & Ni

1° repat	11h 24' av"	60 charge	
	34 av"	60 "	
	34 – 40	20 dech	
	10	14	
	20	7	
	30	6	
	40	5	
	50	5	
	35	20	4

#38 – alum.

Nothing	11h 37 av"	60 charge	Plebs blackened
	47 av"	60 "	
	47 – 52	52 dech	
	10	11	
	20	8	
	30	6	
	40	5	
	50	4	

#39 – alum & Ph. ac. Sl.

Nothing	11h 50' av"	60 charge	Both fetus stunned
	12' 20' av"	60 "	
	av" – 5	26 dech	
	10	20	
	20	12	
	30	9	
	40	7	
	50	5	
	01' 20	4	

Ti & Ni

#40 – alum & sempervirens Sulph.

Nothing	12h 03' av"	60 charge	Neither fetus dead but both stunned
	18' av"	60 "	
	18' – 5	21 dech	
	10	19	
	20	14	
	30	10	
	40	8	
	50	7	
	14' 20	6	
	15	5	
	30	5	

#43 – aranea & sempervirens & Ph. ac. Sulph.

Nothing	12h 16' av"	60 charge	Plebs blackened
	26 av"	"	
	26 – 3	50 dech	
	10	27	
	20	17	
	30	12	
	40	11	
	50	10	
	1) 27' 20	10	
	15	9	
	2) 28' 30	9	
	28' 20	8	
	3) 29' 20	8	
	4) 30 20	7	
	5) 31 20	6	

No 4 Ni

#44 - Barium Chloride

Nothing	12h 35' 00"	60 charge	
	45' 00"	60 "	
	48'	3	7 disch
	10		5
	30		2
	50		1

Too highly pure for

#45 - Barium Chl. & Ammonium Chl.

Nothing	3h 02' 00"	60 charge	
	12' 00"	60 "	
	12	3	44 disch
	10		19
	20		11
	30		7
	40		5
	50		4

Very little

Too pure for H

Faint precip.

#46 - Sulphate of Iron

Nothing	3h 18' 00"	60 charge	
	28' 00"	60 "	
	28	6	105
	10		60
	20		46
	30		34
	40		25
	50		19
	29' 00"		17
	15		16
	30		15
	38' 00"		12
	30'	15	11
	30		9
	31' 00"		8
	30		8
	32' 00"		7
	30		6

#50 - Carbonate of Potash

Nothing.	3h 35' 00"	60 charge	
	45' 00"	60 "	
	45	3	20 disch
	10		6
	20		3
	30		1
	40		1

#51 - Bicarbonate of Potash

Nothing.	3h 15' 00"	60 charge	
	25' 00"	60 "	
	25	2-7	disch
	10		3
	20		2
	30		1

Decomposition of some potassium salt - flaky

#52 - Sulphate of Potash

Nothing	4h 41' 00"	60 charge	
	51' 00"	60 "	
	51	3	14 disch
	10		8 "
	20		4
	30		3
	40		3
	50		2

Wednesday, 10th June '85

Hi & Ni

#53 – Bi-sulphate of Potass.

2° in st	9h 19 00"	60 charge	
	19 00"	60 "	
	19 – 3	8 discharge	Goes freely from neg. to pos. plate.
	10	2	
	20	1	
	30	1	
	40	0	

#54 – Bimalate of Potass.

Nothing	9h 36 00"	60 charge	
	46 00	60 "	Positive pole black. Neg. pole gives off gas.
	46 – 4	14 disch.	
	10	4	
	20	2 "	

#55 – Permanganate of Potass.

Nothing	9h 52 00"	60 charge	
	10h 02 00"	60 "	
	02 – 3	17 disch	
	10	8	
	20	4 "	
	30	2	
	40	1	

Hi & Ni

#56 – Sulphi-cyanide of Potass.

Nothing	10h 05 00"	60 charge	
	15 00"	60 "	
	15 – 3	14 disch.	
	10	6	
	20	1	
	30	1	

#57 – Iuo-cyanide of Potass.

Nothing	10h 22 00"	60 charge	
	32 00"	60 "	Goes quite freely from neg. pl.
	22 – 5	70 disch	
	10	43	
	20	25 "	
	30	14	
	40	10	
	50	8	
	33 – 00	5	
	15	4	
	30	2	

#58 – Hydrocyanate of Potass.

Nothing	10h 35 00"	60 disch.	
	45 00"	60 "	Robert prussiate.
	45 – 5	30 disch	
	10	12	
	20	6	
	30	4	
	40	3	
	50	2	

Ni 9 mi

#59 – Arsenite of Potash.

Nothing	10h 0.5' as" – 60 charge	Gas freely from both plates
	11h 0.5' as" – 60 "	
	08 – 3.9 disch	
	10 – 4	
	30 – 2	
	50 – 2	

#60 – Arsenite & Potash & Phosp. of Potash.

Nothing	11h 10' as" – 60 charge	Gas rise off
	20' as" – 60 "	rapidly from
	20' – 5.7 disch	both plates,
	10 – 6	
	20 – 5	
	30 – 4	
	40 – 2	

#1 – Sulphur Sulphate Time & Time

Cell	Time	Deflection	Remarks
Nothing	12h 01 P.M. – 60 charge		Gas freely from neg. pl.
	04 – – 60 "		
	11 – – – "		
	11 – – 7.5 disch		
	10 – 4		
	20 – 2		
	30 – 1		

#3 – Hyposulphite of Soda

Nothing	3h 07' as" – 60 charge	Plates passify
	17 as" – 60 "	
	7 – – – disch	
	10 – 2	
	20 – 1	
	30 – 0	

#4 – Nitro-cuprate of Soda

Nothing	3h 22 as" – 60 charge	
	32 as" – – "	
	32 ~~0 – 6~~ – 3 disch	
	10 – 2	
	20 – 2	
	30 – 2	

Tin & Zinc

#5 – Nitro prussides of Iron & Ph. ac. &c

1 left	3h 42' 20" – 60 charge		Faint precip.
	52' 20" – 60 "		
	58 – – – disch		
	10 – 2		
	20 – 2 "		
	30 – 1		

#6 – Uranium Sulphate

Nothing	3h 02' 20" – 60 charge		Gro. freely from neg. pole.
	12' 20" – 60 "		
	12' – – –		
	10 – 1 disch		
	20 – 1		
	30 – 1		

#7 – Uranium chloride –

1 left	3h 31' 20" – 60 charge		Heavy black coatings.
	31' 20" – 60 "		
	37 – 40 – 9		
	10 – 9		
	20 – 8		Coating falls off
	30 – 8		
	40 – 8		

Tin & Zinc

#8 – Phosphoric acid

Nothing	3h 35' 20" – 60 charge		Gro. freely from neg. pole.
	45' 20" – 60 "		
	45 – – – disch		
	10 – 1		
	20 0		

#9 – Uranium & Iron Sulphates

Nothing	3h 45' 20" – 60 charge		
	55' 20" – 60 "		
	55 – – – disch		
	10 – 2		
	20 – 1		

#10 – Oxalic Ph. ac.

Nothing	4h 17' 20" – 60 charge		Faint precip.
	17' 20" – 60 "		
	17 – – – disch		
	10 – 2		
	20 – 1		

#11 – Hydrous Uranium & in. Ac. &c.

Nothing	4h 20' 20" – 60 charge		
	21 20" – 60 "		
	30 – 20 – – 10		
	30 – – – – disch		
	10 – 0		
	22 – 0		

Zn & Zn

#14 – Furie – cyanide

nothing 4h 49' 00" – 60 charge 59' 00" – 60 " 59' – – 10 – 0 direct 20 – 0 30 – 0	Geo fairly off rapidly.	

#15 – Brucie cult

8h 02' 00" – 60 charge 12' 00" – 60 " 13' – 00" direct 10 – 0 20 – 0 "	Geo fairly fair	

#16 – Benjamin chl. & K. ac. SC.

4h 00' 00" 5h 19' 00" 60 right 29' 00" 60 " 29' – – 10 – 9 20 – 8 30 – 8 Spring	hydrogen from [illegible] very rapidly before charge.	

#17 – Prophetess Sacra

nothing 9h 19' 00" – 60 charge 29 – 00 – 60 " 29 – 4 6 direct 10 – 3 20 – 2	Geo fairly fair – better	

#19 – acetate of [illegible]

nothing 9h 29' 00" – 60 charge 59' 00" 60 " 59' – 6 14 direct 10 – 8 30 – [illegible] [illegible]	Geo fairly fair negative	

#20 – acetic acid

nothing 9h 59' 00" – 60 charge 10h 29 00" – 60 " 29 – – 10 – 5 20 – 5	Geo [illegible] fairly fair – better	

#24 – Acetic ac. & Ph. ac. 3d.

2° left	10h 13' av – to chang		Eyes gain off
	23' av – to "		slightly
	23 – – 3 – – 9	Quick	
	10 – – 10		Stick forward
	20 – – 14		
	30 – – 14		Primary

#25 – Arsenious acid

Nothing	10h 27' av – to chang		very little gain
	30' av – to "		
	37' av – 50 "		
	38 – – –	Quick	
	10 2		
	20 1		
	30 0		

#26 – Sulphates of Zinc & Copper

Nothing	11h 34' av – to chang		
	44' av – "		Stick sticks
	– – 4 – 9		
	10 – 7		
	20 – 5		
	30 – 2		
	40 – 4		

#27 – Acetate of Am. & Ph. ac. 3d.

1° gain	11h 47' av – to chang		Eyes gain off slightly.
	57' av – to "		
	57 – – –		
	10 – 1		
	20 – 0		
	30 – 0		

#28 – Pepperillin and — Tu & Tu

Nothing	12h 02' av.	-50 ch.	
	12 av.	-50 "	
	12 –	– dech	
	10	-0	
	20	-0	

#29 – Turin and

Nothing	12h 19' av.	-50 ch	
	29 av.	-50 "	Gas formed by [illegible]
	29 –	-52 dech.	
	10	-1	
	20	-1	

#30 – Turin and Phad. Sl.

1 digit --	12 32' av.	-60 ch	
	42' av.	-60 "	Gas in [illegible]
	42 –	-32 dech	
	10	-1	
	20	-1	

#31 – Glycerine & Turin Chloride

	2h 12' av.	-50 charge	Gas freely from neck of fl.
	22 av.	-46 "	
	22 –	-4 dech.	
	10	-2	
	20	-1	
	30	-0	

#32 – Glycerine & Sacch. ac. — Tu & Tu

6 digits	2h 25' av.	-60 charge	Gas given off [illegible]
	55 – av.	-60 light	
	55 –	-7-20 dech.	
	10	-20 light	Gas [illegible]
	20	-22	
	30	-22	
	40	-23	Bottle became red [illegible]
	50	-23	
	36 – av.	-23	
	37 – av.	-26	
	39 – av.	-29	
	42 – av	-31	
	46 – av.	-36	

Bottle very [illegible]

#33 – Glycerine & Sacch. ac.

Nothing	2h 45' av.	-60 charge	Gas [illegible]
	55 av.	-48 "	
	55 –	– dech.	
	10	-1	
	20	-0	

#34 – Lactic and

Nothing	3h 00' av.	-60 charge	Bubbles [illegible]
	10 – av.	-60 "	
	10 –	-30 "	
	10	-73 dech.	
	20	-15	
	30	-14	
	40	-13	
	50	-9	
	15	-7	
	30	-2	

#35 – hydr. ac. & th. ac. 3l — Tu & Th.

Nothing	3h 24' av – 60 charge 34 – av – 60 " 34 – – – discharg 10 – 4 20 – 4 30 – 5 40 – 6 50 – 9		[illegible]

#36 – Iodine acid.

1° night	3h 35' av – 60 charge 45 av – 60 " 4' – 7 2 discharg 10 2 20 2 30 1		[illegible]

#37 – Iodine & th. ac. 5l.

14th night	3h 50' 00" – 60 charge 4h 07 av – 60 02' – 6 70 discharg 10 – 80 20 – 80 night 30 – 80 40 – 78 50 – 14 03 – 00 – 10 10 – 4 30 – 3 daily 40 – 4		[illegible]

#38 – alum.

2° night	4h 10' av – 60 charge 20' av – 60 " 20 av – 7 discharg 10 – 6 20 – 5 30 – 4		

#39 – alum & th. ac.

Nothing	4h 25' av – 60 ch. 35' av – 60 " 35 – – 3 – 3 discharg 10 – 3 20 – 2 30 – 2 40 – 2		[illegible]

#40 – alum & tannyn sulph.

3° left	4h 35' av – 60 ch 45 av – 60 " 45 – 4 – 3 discharg. 10 – 3 20 – 4 30 – 5 40 – 5		

Zn × Zn

#43 - arsenate of ammonia with [illegible]

Nothing 9h 03' av - 60 charge [illegible] black precipitate

13' av - 20 "

13 - 5-6 dark

20 - 5

30 - 5

40 - 4

45 - 3

Friday, 12th June 1914

#44 - Bismuth chloride — Lime water

Nothing 9h 11' av - 60 charge — Gas [illegible]

21' av - 60 " — [illegible]

21 - 5-14 dark — Lime precipitate

20 - 6

30 - 4

40 - 3

50 - 2

55 - 1

#45 - Bismuth [illegible] — [illegible]

Nothing 9h 27' av - 60 charge — black precipitate

37' av - 60 "

37 - 10-1 dark

20 - 6

30 - 1

#46 - Sulphate of Iron

9h 39' av - 60 charge

49 - av - 60

49 - - dark

10 - 2

20 - 2

30 - 1

#50 – Carbonaceous Pellets — Zu & Zu

nothing	9h 57' av'd – 20 ch.	Gas rapidly
	10h 07' av'd – 10 "	from bottom
	07' – 6-18 discg	of pellets
	10 – 12	
	20 – 8	
	30 – 6	
	40 – 4	
	50 – 3	

#51 – Bituminous Pellets.

nothing	10h 10' av'd – 20 chg	Gas rapidly coming
	20 av'd – 20 "	off top of pellets.
	20 – 4 discg	
	10 – 7	
	20 – 4	
	30 – 3	
	40 – 3	

#52 – Dry Pellets [illegible]

nothing	– 10h 25' av'd – 20 charge	
	25' av'd – 20 "	
	25 – 3-19	
	10 – 9	
	20 – 3	
	30 – 2	
	40 – 2	
	50 – 1	

#53 – Bituminous Pellets

5° left	10h 34' av'd – 20 charge	Heavy gas
	47 av'd – 20 "	off top of pellets
	49 – 2-22 discg	
	10 – 2	
	20 – 3	back charge
	30 – 5	Gas gain off
	40 – 3	rapidly
	50 – 2	

#54 – Bituminous Pellets.

nothing	11h 52' av'd – 20 charge	Heavy flicker
	11h 55' av'd – 20 "	off point and
	00 – 4-31 discg	continuous.
	10 – 16	
	20 – 6	
	30 – 4	
	40 – 3	
	50 – 2	

#55 – Bituminous Pellets.

1° left	11h 05' av'd – 20 charge	
	15 av'd – 20 "	
	15 – 4-13 discg	
	10 – 6	
	20 – 2	

Zn + Zn

#56 – Sulphuret cyanide of Potass

Nothing 11h 15' no ' – no chg

20 no " – no "

57 – 4.17 deschg

10 – 9

20 – 5 "

30 – 3

40 – 2

#57 – Ferro-cyanide of Potass

Nothing 11h 38' no ' – no chg

37 no " – no

41 no ' – 42 "

41 – 4.25 deschg acid

10 – 22

20 – 19

30 – 17

40 – 16 "

50 – 12

42' – 50 – 11

15 – 9

30 – 6

45 – 00 – 6

15 – 5

#58 – Hydrocyanate of Potass

Nothing 11h 44 no ' – no chg Sol

54 no " – no

54 – 3.11 deschg hydrochg

10 – 4

20 – 2

30 – 1

40 – 1

Zn + Zn

#59 – arsenite of Potass

1 left

12' no ' – no chg		Flakes black-
10 – – no "		ened
10 – 44 – 5 deschg		no fresh
10 – 3		
20 – 2		
30 – 1		

#60 – Arsenite & Phosphate Potass.

Nothing 12h 12' no ' – no chg Sol clearly

56 no " – no " fresh.

56 – 5.11 deschg Flakes black-

15 – 4 ened

20 – 2

30 – 1

40 –

Brees & Brees

#1 - Sodium Impatato

Call	Lines	Refl.	Remarks
Nothing	3h 14' 00" -- 60 change 34' 00" -- " 24 -- 4-12 check. 10 -- 8 20 -- 4 30 -- 1 40 -- 0		Bees quiet off by Lilly.

#3 - Hydrometaphate of Soda.

Nothing	2h 36' 00" -- 60 change 46 00" -- 60 " 46 -- 4-6 check 10 -- 2 20 -- 1		Bees quiet

#4 Nitro-prussiate of Soda.

Nothing	3h 51' 00" 60 change 3h 01 00" 60 " 01 -- 3 12 check 10 -- 4 20 -- 3 30 -- 2		Bees coming on position pl.

#5 - Nitro prussiate of Soda

Left	3h 19' 00" -- 60 change 19' 00" -- 60 " 19' -- 3-10 check 10 -- 3 20 -- 2 " 30 -- 2 40 -- 1		Bees coming on position

#6 - Hexamethylene tetraphosphate

Nothing	3h 21' 00" -- 60 change 31 00" -- 60 " 31 -- -- 0 check 10 -- 0 20 --		Bees quiet pl.

#7 Hexal

Nothing	3h 54' 00" -- 60 change 04 00" -- 60 " 4 -- 60 10 -- 37 20 -- 00 30 -- 10 40 -- 8 50 -- 6 -- 00 -- 5		

Brass & Brass

#8 – Phosph. ac.		
Nothing	4h 24' 00" – 60 charge 34' 00" – 20 " 34' – 40 decl 60 – 21 20 – 9 " 30 – 7 " 40 – 5	Black colouration
#9 – Mang. & Lime sulphates		
nothing	4h 44' 00" – 60 ch 54' 00" – 60 " 54' 00" – 150 decl. 10 – 130 20 – 42 30 – 21 40 – 17 50 – 16 55' – 00 – 15 15 – 13 30 – 11 56' – 00 – 10 30 – 9 57' 00" – 8 30 – 7	Black deposit on plate

#10 – Sheet Ph. ac.		
nothing.	5h 00' 00" – 60 charge 10' 00" – 60 " 10' – 5 – 60 decl 10 – 20 20 – 15 30 – 11 40 – 9 50 – 7 00 – 6	Plates tin & coloured
#11 – Hydrate of manganese + Ph. ac. Sol.		
nothing	5h 12' 00" – 60 charge 18' 00" – 60 " 22' 00" – 30 " 22 – 3 – 21 10 – 9 20 – 4 30 – 2	Black colouration on a portion of plate

Saturday 13th June. 1891

#14 - Ferric Cyanide — Brass & Brass

Nothing	9h 17' 00"	60 charge	Both plates blue-black
	27' 00"	60 "	
	27' - 6	70 discharge	
	10	22	
	20	13 "	
	30	9	
	40	5 "	
	50	3	

#15 - Benzoic acid

Nothing	9h 31' 00"	50 charge	Gas given off freely. White ppt. from previous ppt.
	41' 00"	50 "	
	41' - 5	12 discharge	
	10	9	
	20	8	
	30	7	
	40	6	
	50	5	
	42' - 00	5	
	15	4	

#16 - Brass & Brass

Thompson Ch & Ph. Ac. Sl.

1st left.	9h 40' 00"	60 charge	Gas given off freely
	50' 00"	60 "	
	50' - 5	21 discharge	
	10	14	
	20	10 "	
	30	8	
	40	7 "	
	50	7	
	00	6	

#18 - Phosph. of Soda.

Nothing	9h 56' 00"	60 charge	Plates discolored. Blue deposit on positive plate
	10h 56' 00"	60 "	
	0h - 2	14 discharge	
	10	2	
	20	1	

#19 - Acetate of Soda.

Nothing	10h 05' 00"	60 charge	Faint green precipitate
	15' 00"	60 "	
	15' - 3	30 discharge	
	10	14	
	20	7 "	
	30	4	
	40	2	

Bress & Bress

#90 - acetic acid			
Nothing	10h 23' 00"	60 charge	Gas freely from neg. plate.
	33 00"	60 "	
	32 - 6	50 each	
	10	19	
	20	17 "	
	30	12	
	40	8	
	50	5	
	34 - 00	3	
#91 - acetic ac. 4 H. ac. 30			
Nothing	10h 34' 00"	60 charge	Gas freely from neg. plate.
	47 00"	"	
	49 - 6	80 each	
	10	54	
	20	42 "	
	30	29 "	
	40	24	
	50	14	
	50 - 00	9	
	15	7	
	30	5	
	49 - 00	2	

Bress & Bress

#88 - Arsenious acid			
Nothing	10h 58' 00"	40 charge	Faint dark precip.
	11h 03' 00"	40 "	
	03 - 2	6 each	
	10	3	
	20	2	
#89 - Iron & Lime Sulphates.			
1° right	11h 09' 00"	80 charge	Gas very lightly.
	17' 00"	— "	
	17 - 7	150 each	
	10	130	
	20	82 "	
	30	34	
	40	18 "	
	50	14	
	15 - 00	12	
	15	11	
	30	10	
	19 00	8	
	30	7	
	20 - 00	6	
	30	5	

Brass & Bros

25 – Actinic acid

1° left	11h 25' 00"	20 chrg	Gas left off.
	33 00	60	
	38 – 4	30 disch	
	10	28	
	20	26	
	30	9	
	40	7	
	50	5	

26 – Sulphthalic anhydride & Tinc

nothing	11h 35 00"	20 chrg	
	45 00	60	20 action
	45 – 4	30 disch	
	10	54	
	20	30	
	30	21	
	40	17	
	50	14	
	46 – 00	1	
	15	10	
	30	9	
	47 00	8	
	30	7	
	45 – 00	7	
	30	6	

Brass & Bros

27 – Bromphthalic & P. Ac. Sb.

nothing –	11h 50' 00"	20 chrg	Gas from neg. plates
	12h 12' 00"	"	
	12' – 4	20 disch.	
	10	44	
	20	14	
	30	7	
	40	5	
	50	4	

Monday 15th June

Experiments with Bichromate Cells. Zinc & Carbon

Solution Saturated sol. chro. in H_2O .. 17 cc
+ H_2O .. 34 cc
+ HCl .. 17 cc

Time	Deflections	Remarks
11^h 31' 00"	80 div (discharge) = .114 amperes	Weight of zinc before circuit = 25.629 grms
41' 00"	80 left	Wt. after action = 25.577
11^h 54' 00"	80 div right (charge)	Wt. after counter charge = 23.5 grms
12^h 04' 00"	80 div	

Second current (from battery) equivalent to 80 div as 0.23 amperes since it balanced the current from the primary cell

Loss in 1st = 1.952 grms
" " 2nd = 0.177 "

Second loss probably due to local action & there was no deposit.

Bichromate Cell – Zinc & Carbon plates

Saturated solut. of bichromate in HNO_3 + 1/3 vol H_2O

Time	Defl.	Remarks
3^h 46' 00"	80 left	Wt. of zinc before action = 33.5 grms
56' 00"	80	After " = 32.5
3^h 02' 00"	80 right	Wt. after counter ch. = 19.94
12' 00"	80 "	
		Loss 1st exc. = 1.00 grm
		" 2nd " = 2.56

Return current therefore does not deposit zinc.

Same solution – allowing the cell to run down

Continuation of Previous Table — Tuesday, 16th June, 1885.

22° defl. no extra resistance in circuit
Deflection left of zero.
Reverse current from battery
80° defl. right at 9:35 a.m.
extra resist from 20 ohms to 13 ohms.
Battery disconnected at 10h 10m — 35 minutes

Recd.	110°	at 10h 10' 10"	no extra resist. in circuit
	90°	" 30"	" " " "
1)	40°	" 11' 00"	" " " "
	37°	" 30"	" " " "
2)	35°	" 12' 00"	" " " "
	32°	" 30"	" " " "
3)	29°	" 13 00"	" " " "
4)	26°	" 14 00"	" " " "

Gas given off at cathode.

at 10h 22' —
as a previous given 19° defl. left, no extra resistance in circuit.
Charge from battery to give 80° defl. right with 21 ohms resist in circuit —
at 11h 57' extra resist = 13 ohms
" " " disconnect and discharged

	90°	at 10h 57' 10"	no extra resist.
	82	30"	
1)	60	55 00"	
	47	30	
2)	36	59 00'	
	32	30	
3)	29	4h 00' 00"	
	27	30"	
4)	25	01 00	
	23	30	
5)	22	02 00	

Gas given off.

3rd charge.

5° left primary — 0 ohms extra circuit.

Charge.

50° left	3h 32' 00"	25 ohms extra circuit
50° "	4h 07' 00"	13 " " "

Discharge

50	0) 07 00"	0 ohms extra circuit
42	10"	"
34	20"	" " "
32	30"	
30	40"	
27	1) 08 00"	" " "
25	30"	
23	1) 09 00"	
21	30"	" " "
19	2) 10 00"	
17	2) 11 00"	
15	2) 12 00"	
13	2) 13 00"	" " "
11	2) 14 00"	

Cell compared very small amounts of gives copper sulphates in porous pots with zinc & carbon electrodes in respective pots.

4° left. 3 minutes after setting up.

5°	"	14	"	" " "
6°	"	15	"	" " "
6°	"	20	"	" " "
6°	"	25	"	" " "

6° is probably near the highest value.

Start circuited at 5h 30 P.M.

Wednesday, 17th June

All short-circuited last night given in definition at 9:10 am.
Current from battery sent through in opposite direction. Res all right

20 min right 9h 10' 00" 16 ohms extra resist.
" " " 40' 00" 13 " " "

Discharge

5 left --- 9h 40' 10" no extra resistance
5 ---------- 20" " "
6 ---------- 4' 00" " "
6 ---------- 42' 00" " "
5 ---------- 43' 00" " "
5 ---------- 50' 00" " "
5 ---- 10h 00' 00" " "
5 ---------- 10' 00" " "
4 ---------- 20' 00" " "
4 ---------- 30' 00" " "
4 ---------- 40' 00" " "
4 ---------- 50' 00" " "
4 ---- 11h 00' 00" " "

Continuation of similar electrodes tests.

#28 - Propionic acid

Cell	Time	Defl.	Remarks
Nothing	11h 52' 00" -- 08 charge		Some cell in circuit no extra resist
	12h 02' 00" -- 05 "		
	02' 7"-1 break		Goes lightly
	10 -- 1 "		Position Pt. black
	20 -- 0		

#29 - Formic acid

Nothing	12h 17' 00" -- 15 charge		Faint slowly positive.
	27 00" -- 16 "		
	27 - 2 - 1 break		
	10 -- 0		
	20 -- 0		

#30 - Formic acid & Pt. ac.

Nothing	2h 01' 00" -- 05 charge		Goes lightly from negative.
	11' 00" -- "		
	11 -- 3 - 9 break		
	10 -- 7		
	20 -- 6 "		
	30 -- 6		
	40 -- 6		
	50 -- 5		
	12' 00 -- 5		

Bruce & Bean

#31 – Glycerin & Sodium Chloride		
nothing	2h 16' ao' – 30 charge 26' ao' – 28 " 26' – 4-3 disch 10 – 3 20 – 1	See freely
#32 – Glycerin & Sulph. ac.		
nothing	3h 32' ao' – 60 charge 42' ao' – 60 " 42' – 4-14 disch 10 – 12 20 – 12 30 – 12 40 – 11 50 – 11 43' – 60 – 11 15 – 11 30 – 10 45 – 10 44' – 60 – 10 15 – 9 30 – 9 45 – 9 45' – 60 – 8 15 – 8 30 – 7 46' – 60 – 7 15 – 6	See freely. Gray coating on positive

Bruce & Bean

#33 – Glycerin & Ph. ac.		
nothing	2h 5-1' ao' – 60 charge 53 ao' – 60 " 3h 61 – 60 – 42 01 – 3-11 disch 10 – 4 20 – 2 30 – 1	See gain freely. Faint brown precip
#34 – Oxalic acid		
nothing	3h 03' ao' – 60 charge 06 ao' – 60 " 13' ao' – 73 " 13' – – – disch 30 – 0 30 – 0	Positive pol. blackened Neg. pol. gains gas
#35 – Oxalic & Phosph. ac. 1:6		
nothing	3h 27' ao' – 60 charge 28 ao' – 60 " 28 – 4-9 disch 10 – 8 20 – 8 30 – 8 40 – 7 50 – 7 29' – 60 – 7 15 – 6 30 – 6 35' – 60 – 5	See freely

Burn & Burn

136 - Intrine acid

Nothing	3h 34' av - 60 ch 40 av - 60 46 av - 30 44' - 53 6 dech 10 - 32 20 - 27 30 - 24 40 - 23 50 - 22 45' - 00 - 22 15 - 21 30 - 19 46 - 00 - 16 30 - 14 47 - 00 - 12 30 - 10 48 - 00 - 7 30 - 4	Sol lightly Plates black-sweets

Burn & Burn

134 - Intrine acid & Ph acid - 36

Nothing	4h 04' av - 60 charge 14' av - 60 14 - 2 14 dech 10 - 13 20 - 12 30 - 10 40 - 8 50 - 7 15' - 00 - 6 15 - 6 30 - 5 50 - 5	Sol lightly Plates blackish-red

138 - Plum

Nothing	4h 23' av - 60 charge 35' av - 60 33 - 5 - 15 dech 10 - 14 20 - 13 30 - 10 40 - 8 50 - 6 34 - 00 - 5 15 - 4	Sol lightly

Brass & Bean

#39 – Alum & Phacae.			
Nothing	4h 41' 00" – 60	sharp	Faint w. hoarfr.
	51 00 – 60	"	
	54 – 00 – 14	Dark	
	10 – 13		
	20 – 12		
	30 – 12	"	
	40 – 11		
	50 – 11		
	52 – 00 – 10	"	
	15 – 10		
	30 – 9		
	55 – 00 – 8		
	30 – 6		
	54 – 00 – 5		
#40 – Alum & Rumpe Sulph			
Nothing	4h 55' 00" – 60	sh	Vibrs
	5h 05 00" – 60	"	decolour'd
	05 – – 15	dark.	
	10 – 14		
	20 – 13		
	30 – 12		
	40 – 12		
	50 – 11		
	06 – 00 – 10		
	15 – 8		
	30 – 6		
	07 00 – 5		

Brass & Bean

#43 Absence of Rumpe & Prime Sulph			
	5h 10' 00" – 60	sharp	Dark depos'n
	20 00" – 60	"	on both plates
	20 00 – 15	dark	
	10 – 14		
	20 – 13		
	30 – 13		
	40 – 13		
	50 – 12		
	21 – 00 – 12		
	15 – 12		
	30 – 11		
	22 – 00 – 10		
	30 – 10		
	26 – 00 – 10		
	30 – 10		
	24 – 00 – 9		
	30 – 9		
	25 – 00 – 8		
#44 – Barium Chloride			
	5h 28' 00" – 60	sharp	
	30 00" – 60		
	32 00 – 0	dark	
	10 – 0		
	20 – 0		
	30 – 0		

Thursday, 18th June 1908

Brown & Ross

#41 Sulphide of Iron & Lime Sulph

Nothing	9h 13' 00"	60 ch.	
	13' 00"	60	
	23	#150 deck	Gas very lightly
	10	90	
	20	76	
	30	38	
	40	25	
	50	24	
1	24' 00"	22	
	15	20	
	30	18	
2	25' 00"	16	
	30	14	
3	26' 00"	12	
	30	11	
4	27' 00"	10	
	30	10	
5	28' 00"	9	
6	29' 00"	9	
7	30' 00"	9	
8	31' 00"	9	
9	32' 00"	8	
10	33' 00"	8	
	34' 00"	8	

Brown & Ross

#45 - Barium & Magn. Chloride

Nothing	9h 40' 00"	60 chaps	Plates blackened
	50' 00"	60	
	50	60 deck	
	10	25	
	20	11	
	30	6	
	40	4	

#46 - Sulphide of Iron

1st night	9h 56' 00"	60 ch	Very little gas.
	10h 06' 00"		
	06	90 deck	
	10	43	
	20	21	
	30	14	
	40	11	
	50	9	
	07' 00"	8	
	15	7	
	30	6	

#50 - Carbonate of Potassium

Nothing	10h 13' 00"	60 chaps	Gas freely
	23 00"	60	from #4
	23	3 15 deck	
	10	10	
	20	5	
	30	2	
	40	0	

Russo & Bers

#51 - Bicarbonate of Potass

Nothing	10h 25' 00" - 60 ch 35' 00" - 60 " 35' - 6 - 5 deck 10 - 3 20 - 2	Gas freely.

#52 - Sulphite of Potass.

Nothing	10h 40' 00" - 60 ch 50' 00" - 60 50' - 5 - 2 deck 10 - 14 20 - 10 30 - 6 40 - 4	Gas freely. Pieces from neg. pl.

#53 - Bi-sulphate of Potass.

Nothing	10h 56' 00" - 60 ch 11h 06' 00" - 60 " 06' - 3 - 95 deck 10 - 62 30 - 46 30 - 38 40 - 35 50 - 20 1) 07' - 00 - 27 15 - 23 30 - 21 2) 08' - 00 - 10 3) 09' - 00 - 11 10' - 00 - 4	Gas lightly

Russo & Bers

#54 - Bromide of Potassium

Nothing	11h 13' 00" - 60 charge 23' 00" - 60 " 23 - 5 - 6 deck 10 - 3 20 - 2	Gas freely from neg. Pieces from positive plate

#55 - Permanganate of Potass.

Nothing	11h 25' 00" - 60 charge 35' 00" - 60 " 35' - 5 - 2 deck 10 - 0	

#56 - Sulpho-Cyanide of Potass

1st left	11h 37' 00" - 60 charge 47' 00" - 60 " 47 - 9 - 150 10 - 140 20 - 16 30 - 10 40 - 9 50 - 8 45' - 00 - 7 15 - 5 30 - 2	Positive plate immediately blackened. Neg. pieces gas freely Brown precip

Gross & Bean

#57 – Ferro-cyanide of Potash

2° repit	11h 55' 00"	60 clear	
	12h 05' 00"	60 "	
	05'	3 11 disch	
	10	3	
	20	1	
	30	0	

#58 – Hydrocyanphite of Potash.

nothing	12h 10' 00"	60 cl	Light freq
	20' 00"	60 "	
	20	3 12 disch	
	10	4	
	20	2	
	30	0	

#59 – arsenite of Potash.

12h 22' 00"	60 cl	
32 00"	60 "	
32	3 10 disch	
10	13	
20	7	
30	5	
40	4	
50	4	

Gross & Bean

#60 – Arsenite of Potash + Pl. Ac. Sl

nothing	B: 12' 00"	60 cl	Gas very freely
	22' 00"	"	
	22	4 9 disch	
	10	5	
	20	3	
	30	2	
	40	2	

Friday, 19th June. Gen. antimony & antimony.

#1 - Sodium Tetraphenyl

Nothing	9h 45' 00"	60 change	Gas freely given off.
	48' 00"	60 "	
	55' 00"	58 "	
	55' -	58 decl	
		10 - 2	
		20 - 1	

#2 - Red Fluid (H_2SO_4 + $K_2O \cdot CrO_3$ + H_2O)

Nothing	10h 06' 00"	60 change	
	30	10 "	
	16' 00"	01 "	
	16' -	1 decl	
		10 0	

#3 - Hydrochloride of Iodia

Nothing	10h 25' 00"	60 ch	Brown cloudy precip.
	35' 00"	60 "	
	35' -	4 30 decl	
		10 - 11	
		20 - 6	
		30 - 4	
		40 - 3	

#4 - Nitro prusside of Iodia

Nothing	10h 47' 00"	50 ch.	
	15 -	40 "	
	57 -	04	
	57 -	0 decl	
		10 0	

#5 - Nitro prussiate of Pk de Fe

1' Left	11h 08' 00"	50 ch	
	10 -	10 "	
	18' 00" -		
	18 -	3 7	
		10 - 3	

#6 - Strychnin sulphate

nothing	2h 28' 00"	50 ch.	Faint brown precip.
	35' 00"	22 -	
	38' -	9 47	
		10 - 46	
		20 - 24	
		30 - 14	
		40 - 9	
		50 - 7	
	39' -	00 - 5	
		15 - 4	
		30 - 3	

Antimony treating

#7 – Neuropsychiatric

Nothing	3h	43' av" – 45 ch	
		53' av" – 86 "	
		55' – 5-30 deep	
		10 – 22	
		20 – 14	
		30 – 12	
		40 – 9	
		50 – 6	
		00 – 6	
		15 – 5	

#8 – Ch. Ac.

Nothing	2h	56' av" – 60 ch	Considerably
	3h	06' av" – 60 "	Pleiocytosis
		06 – 3-30 deep	
		10 – 6	
		20 – 3	

#9 – Neuropsychiatric Encephalitis

Nothing	3h	12' av" – 60 ch	No pus
		20' av"	
		22' – 2-65	
		10 – 22	
		20 – 30	
		40 – 20	
		23' – 60 – 14	
		24' 30 – 10	
		23' 00 – 8	
		00 – 6	

Ch. Ac.

#10 – St. Joseph. Ac.

1° right	4h	01' av" – 60 ch.	Pleio Cholesterol
		30" – 30 "	
		00 – 2-00 – 06	
		10 – 4 – 6	
		10 – 2	
		20 – 1	

#11 – Hysteria, Neuropsychiatric & Ch. Ac. St.

1° right	4h	14' av" – 60 ch	Pleio Cholesterol
		30" – 60 "	
		15' av" – 10	
		24 – 00 – 4	
		26 – 7 – 0 deep	
		10 – 0	
		20 – 0	

#14 – Senile Cognition

Nothing	5h	00' av" – 60 ch	Very freely given off
		10' av" – 60 "	
		00 – 5-50 deep	
		10 – 40	
		20 – 23	
		30 – 16	
		40 – 11	
		11' – 50 – 7	
		30 – 4	

St + St

#15 – Boracic acid

Nothing	5h	15' av'n – 40 ch	Sol very lightly
		30 – 25 –	
		25 av'n – 9	
		25 – – – 0 check	Blebs start
		10 – 0	much.

#16 – Tamper Ch. & Ch. ac. Sol.

Nothing	5h	25' av'n – 20 ch	
		30 – 10	
		35 av'n 6	
		35 – 7 check	
		10 – 11	
		20 – 3	
		30 – 1	

#18 – Phosphate of Soda

nothing	9h	15' av'n – 60 change	Sol freely
		16 av'n – 60 "	
		30 – 20 "	
		35' av'n – 12	
		25 – – 22 check.	
		10 – 1	
		30 – 1	

#19 – acetate of Soda

nothing	9h	37' av'n – 60 change	Sol lightly
		30 – 35	
		47' av'n – 16	
		47 – – 6 check	
		10 – 5	
		20 – 4	
		30 – 3	

#20 – acetic acid

	9h	57' av'n – 60 ch	
		30 – 50 "	
	10h	02 av'n – 7	
		02 – – 1 check	
		10 – 0	

#61 - Acetic ac & Ph. ac. 35

Nothing	10h 17' 00" – 60 ch 30 – 30 " 27 00 – 60 " 27 – 781 dreck 10 – 76 20 – 15 30 – 13 40 – 11 50 – 9 28 – 00 – 8 15 – 7 " 30 – 6	Bees feeding

#23 - Arsenious acid

Nothing	10h 32' 00" – 60 ch 30 – 60 " 42' 00" – 10 42 – 32 dreck 10 – 1 20 – 1	Bees [illegible]

Tincture of Sulphur

Nothing	11h 11' 00" – 60 ch 21' 20" – 60 " 21 – 44 – 90 10 – 63 30 – 24 22 – 00 – 18 30 – 17 23 00 – 16 24 00" – 9 25 00" – 5	Plebs [illegible]

Sunday 22nd June

#25 - Acetic acid.

1° left	9h 58' 00" – 60 ch. 33' 00" – 60 " 33' – 219 dreck 10 – 14 " 20 – 12 " 30 – 10 " 40 – 9 " 34 – 00 – 7 " 30 – 5 " 35' 00 – 3	Bees quiet & freely.

#Sulphate of ammonia & Lime

nothing	9h 40' 00" – 60 ch 50 00" – 60 " 50 – 9 130 dreck 10 – 90 20 – 57 30 – 26 40 – 25 50 – 23 59' – 00 – 22 30 – 20 52' 00 – 20 30 – 19 53' 00 – 17 30 – 14 54 – 00 – 12 30 – 10 55 00 – 6 60 – 0	Bees lively Plebs black-mail

Sh & St

#[illegible] – Glycerin & Ph. ac. sc.

Nothing	10h 10' av – 10 ch 20 av – 10 20 – 2 [illegible] dead 10 – 11 20 – 2 30 – 1		Goo Fly

#28 – Propellin dead

Nothing	10h 25' av – 10 ch. 35' av – 5 35' – 3-2 dead 10 – 1		

#29 – Tannic dead

Nothing	10h 29' av – 20 ch 49' av – 5 49 – 3-2 dead 10 – 1		

#30 – Tannic ac. & Ph. ac. sc.

Nothing	10h 51' av – 60 ch 11h 01 av – 60 01 – 7 32 dead 10 – 20 20 – 23 30 – 12 40 – 8 50 – 7 60 – 6		Goo Fly Tannic bulk potato,

Sh & St

#31 – Glycerin & Sodium chloride

Nothing	11h 05' av – 30 ch 15 av – 30 15 – 4-6 dead 10 – 5 20 – 4 30 – 4 40 – 3		Goo Fly

#32 – Glycerin & Sulphuric ac. sc.

Nothing	11h 17' av – 60 ch 27 av – 20 27 – 5 – 110 dead 10 – 28 20 – 9 30 – 5 40 – 3		Goo Fly

#33 – Glycerin & Ph. ac. sc.

Nothing	11h 29 av – 50 39 – 8-2 dead 10 – 2 20 – 2 30 – 1		

SB & SL

#34 – Oxalic acid

Nothing	11h	45' as 1 – 60 ch	Gas very
		55 as 1 – 60 "	rapidly from
		55 – – 2 – 23 dark	neg. plate.
		10 – 6	
		20 – 2	
		30 – 1	

#35 – Oxalic Ac & Ph. Ac. SL

Nothing	11h	59' as 1 – 60 ch	Gas lightly
	12h	09' as 1 – 20 "	
		09 – – 4 – 58 dark	
		10 – 56	
		20 – 37	
		30 – 27	
		40 – 8	
		50 – 6	
		60 – 5	

#36 – Tartaric acid

Nothing	12h	10' as 1 – 60 ch	Gas freely
		33' as 1 – 60 "	from neg
		23 – – 6 – 28 dark	plate.
		10 – 23	
		20 – 20	
		30 – 15	
		24 – – 00 – 13	
		30 – 9	
		25 – as 1 – 7	
		30 – 6	
		26 – as 1 – 5	

SB & SL

#37 – Tartaric acid & Ph. Ac SL

1 night	12h	55' as 1 – 60 charge	Gas quickly
		25 as 1 – 60 "	from neg. plate
		25 – – 5 – 72 dark	
		10 – 47	
		20 – 26	
		30 – 19	
		40 – 16	
		50 – 13	
		39 – 00 – 10	
		15 – 7	

#38 – Alum

Nothing	2h	01' as 1 – 60 charge	Not so quick
		11' as 1 – 10 "	
		11 – – 1 – 12 dark	
		20 – 0	

#39 – Alum & Ph. Ac

Nothing	2h	15' 00" – 60 ch	Not so fast
		25' as 1 – 65 "	since
		25' – – 1 – 40 dark	
		20 – 35	
		30 – 21	
		40 – 10	
		50 – 7	
		24' – 00 – 4	
		15 – 3	

St & St

#40 – Alum & Strength Sulphate

Nothing	2h 37' 00" – 60 ch		
	47 00 – 7 "		Goes lightly
	41 – 6.65		first off
	10 – 58		
	20 – 45		
	30 – 30		
	40 – 24		
	50 – 19		
	3) 48 – 00 – 18		
	15 – 16		
	30 – 13		
	45 – 11		Black
	4) 49 – 00 – 9		deposit.
	30 – 9		
	5) 50 – 00 – 8		
	30 – 7		
	6) 51 – 00 – 7		
	30 – 6		
	7) 52 – 00 – 6		
	8) 53 – 00 – 5		

St & St

#43 – Arsenite of Strength & Lime Sulph.

1 oz per	2h 55' 00" – 60 ch		
	3h 00' 00" – 60 "		Goes very lightly
	05 – 95 ch		
	10 – 62		Black – a few
	20 – 34		D.
	30 – 20		
	40 – 27		
	1) 06' – 00 – 22		
	30 – 18		
	2) 07' – 00 – 14		
	30 – 11		
	3) 08' – 00 – 9		
	30 – 8		
	4) 09' – 00 – 7		
	5) 10' – 00 – 5		

#44 – Boracic Chloride

nothing	3h 16' 00" – 60 ch		
	26' 00" – 0 –		
	26 – 40 60 ch		
	10 – 8		
	20 – 4 "		
	30 – 3 "		
	40 – 2 "		
	50 – 1		

S.B. X S.B.

#45 – Barium & Strontium Chlorides

1° left

	3h 31' 00" – 60 ch	
	41 00" – 5 "	
	41 – 4 – 65 dech	
	10 27	
	20 – 18	
	30 – 14 "	
	40 – 10	
	50 – 7	
	4h – 00 – 6	
	15 – 5 "	

#46 – Sulphate of Iron

Nothing.

	3h 47' 00" – 65 ch	Very
	57 00" 60 "	Crystals on
	57 – 5 27 dech	plates.
	10 – 41	
	20 – 38	
	30 – 34 "	
	40 – 27	
	50 – 23	
	5h – 00 – 20	
	15 – 18 "	
	30 – 15	
	59 – 00 – 13	
6h	00 – 00 – 10	
	01 – 00 – 8	
	02 – 00 – 7	
	02 – 00 –	

S.B. X S.B.

#50 – Carbonate of Potash

Nothing

	4h 29' 00" – 65 ch	Goes freely
	39 00" – 60 "	from both
	49 – 3 – 39 dech	plates
	10 – 2	
	20 – 1	

#51 – Bi-carbonate of Potash

Nothing

4h 41' 00" – 65 ch	
41 30" – 60 "	
51 00" – 12	
51 – 4 – 6	
10 – 3	
20 – 2	

#52 – Sulphate of Potash

Nothing

4h 56' 00" – 65 ch		Goes very
5h 06' 00" – 35 "		freely from
06' 00 – 32 dech		off.
10 27		
20 – 19		Brown color
30 – 13		to solution.
40 – 11		
50 – 9		
07' – 00 – 7		
15 – 5		

SH & SL

#53 – Bi-sulphate of Potass

Nothing

5h 09' aw – 60 ch
19 aw – 60 "
19 – – – – dech
10 – 50
20 – 95 "
30 – 55
40 – 32
50 – 15
21 – 00 – 8 "
15 – 5
30 – 3

See lightly

#54 – Chloride of Potass.

5h 34' aw – 60 ch
34' aw – 60 "
34 – – 3 – 20 dech
10 – 12
20 – 9
30 – 6
40 – 4

See from mg. gl.

Sunday, 23rd June.

#55 – Permanganate of Potass

SH & SL

Nothing

9h 57' aw – 60 ch
58' aw – 50 "
59 – – 5 – 4 dech
10 – 3
20 – 1 "

#56 – Sulphate-cyanide of K

1 night

9h 33' aw – 60 ch
43 aw – 60 "
43 – – 3 – 96 dech
10 – 12
20 – 8 "
30 – 6
40 – 5
50 – 4

See carefully from mg. gl.

#57 – Ferro-cyanide of Potass

Nothing

9h 57' aw – 60 ch
10h 01' aw – 8 –
01 – – 4 dech
10 – 4
20 – 4
30 – 3

See from mg. gl.

Sh #58

#58 – Hydrosulphate of Potass

Nothing	10h 08 as 2 – 60 ch	Res gas from
	13 as 2 – 60 "	
	13 – 5 – 60 each	
	10 – 34	Heavy brown
	20 – 21	precipitate.
	30 – 12	
	40 – 9	
	50 – 8	
	14 – 30 – 7	
	15 – 5	

#59 – Arsenide of Potass.

Nothing	10h 32 as 2 – 60 ch	Vacuum pump
	32 as 2 – 60 "	
	32 – 3 – 40 each	Res full of gas
	10 – 13	neg. flame
	20 – 5	
	30 – 3	

#60 – Arsenide of Potass & Phosph. of Potass

Nothing	10h 36 as 2 – 60 each	Black ppt.
	44 as – 60	
	6 – 50	
	10 – 14	
	20 – 5	
	30 – 2	

#61 Bromic Acid & Ag – 1:4

#62 Ter chloride of Antimony (Lower Bottle) 1:1

#63 " " " " & Chloride of Tin

#64 " " " & " Chlor

#65 " " " Cit. of K + Ammon + Tart Sol.

#66 " " " " " " " + Ag 1:1

#67 " " " + chloride of Mercury 1:1

#68 " " " + " " " Ammon

3) Copper & Copper

#61 - Benzoic Acid

2° left	3h 49' av - 60 ch	Citric Acid 50 ohms		Yellowish color
	59' av - 60 "	45 "		given to solution
	59' - 10.2 disch	0 "		
	30 - 1			

8) Silver & Silver

#61 - 1° left

	4h 04' av - 60 ch	49 ohms		Neg. pole darkened
	14' av - 60 "	40		Heavy white cloudy
	14' - 6.84 disch	0 ohms		precip from
	10.22			positive
	20 - 12 "			
	30 - 10			
	40 - 8			
	50 - 6			
	60 - 5			
	15 - 4			

4) Lead & Lead

#61 - Nothing

	4h 30' av - 60 ch	50 ohms		Plebs Nitrate
	30' av	40 "		
	30 - 10.0 disch			
	20 - 0			

7) Nickle & Nickle

#61 - Nothing

	4h 37 av - 60 ch	45 ohms		Neg. pole
	47 av - 60 "	30 "		blackened
	47 - 5.2 disch	0 "		
	10.0			
	20 - 7			
	30 - 5			
	40 - 4			

24th June, 1885

#61 - Brown's creek — Zinc & Zinc

Cell	Time	Reflection	Extra Resistance	Remarks
1° left	9h 18' 00"-60	ch	46 ohms	Res. fairly from mag. ch.
	18' 00"-60	"	34 "	
	28' 2-7	deach	0 "	
	10-5			
	20-4	"		
	30-3			

#61 - Zinc & Zinc

Cell	Time	Reflection	Extra Resistance	Remarks
resting	9h 33' 00"-65	ch	31 ohms	Res. fairly from mag. plates.
	43' 00"-60	"	31 "	
	43-4.4	deach	0 "	
	10-8			
	20-4			
	30-2			

#61 - Antimony & Antimony

Cell	Time	Reflection	Extra Resistance	Remarks
resting	9h 49' 00"-65	ch	4 ohms	Res. from tests plates
	59' 00"-36	"	0 "	
	59-5.8	deach	0 "	
	10-7			
	20-5			
	30-3			

#61 - Iron & Iron

Cell	Time	Reflection	Extra Resistance	Remarks
resting	10h 01' 00"-60	ch	39 ohms	Res. fairly from mag. plates. Bottom plate not corroded
	11' 00"-60	"	48 "	
	11-5.73	deach	0 "	
	10-19			
	20-16	"		
	30-11			
	40-7			
	50-5			
	12' 00-3.			

#61 - Carbon & Carbon

Cell	Time	Reflection	Extra Resistance	Remarks
	12h 12' 00"-60	ch	26 ohms	Res. fairly from 1st left
	24' 00"-60	"	30 "	
	24-5.68	deach		
	10-27			
	20-15			
	30-11			
	40-8			
	50-7			
	1-00-6			
	15-5			

#61 — Cadmium & Cadmium

Nothing	10h	37' 00" – 60	ch	290 ohms	Gas fully
		47' 00" 60	"	32 "	from my
		47' – 3.4	Deck	0 "	
		10 – 2			
		20 – 1	"		
		30 – 1	"		

#61 — Brass & Brass

Nothing	10h	54' 00" – 60	ch	300 ohm	Gas fully
	11h	04' 00" 60	"	12 "	
		04' – 3.8	Deck	0 "	from my
		10 – 7			
		20 – 4	"		
		30 – 2			

#62 — Iron & Iron & Antimony & Antimony

nothing	11h	31' 00" – 60	chg	54 ohms	Gas fully
		41 00" – 60	"	55 "	dark coal
		41 – 54	Deck	0 "	to magnetism
		10 – 2			galv
		20 – 1			

#62 — Cadmium & Cadmium

1° left	4h	44' 00"	60	ch	57 ohms
		54' 00" – 60	"	– 50 "	
		54 – –	Deck	– 1 –	
		10 –			
		20 –			
		30 – 15 – 0			
		40 – 13.5			
		50 – 12.0			
		55 – 00 – 60			
		15 – – 60			
		30 – – 5			
		45 – + 2			
		56 – 00 – + 4			
		30 – + 12			

Both plates immersed in clear water. Gas fully from working block & pocket & pump

Antimony black pocket

Carbon & C

1° left	3h	34' ow — 65 ch	57 ohms	very little
		44 ow — 60 "	44 "	[illegible]
		44 — — dead	0 "	[illegible]
		17 — 50		
		20 — 35		
		30 — 72		
		40 — 39		
		50 — 31		
		45' — 00 — 24		
		15 — 19		
		30 — 15		
		45 — 12		
		50 — 00 — 10		
		15 — 8		
		30 — 7		
		47' 00 — 6		

Copper & Cu

Nothing	2h	51' ow — 60 ch	54 ohms	[illegible]
	3h	01 ow — 60 "	50 "	[illegible]
		01 — 34 dead	0 "	[illegible]
		10 — 3		
		20 — 2		
		30 — 1		

Nothing	3h	18' ow — 60 ch	55 ohms	no action
		23 ow — 60 "	53 "	
		23 — 49 dead	0 "	
		10 — 4		
		20 — 2		
		30 — 1		

Lead & Pb

Nothing	3h	34' ow — 60 ch	54 ohms	[illegible]
		44 ow — "	"	
		44 — 54 dead	0 "	[illegible]
		10 — 0		
		20		

Nickel & Ni

Nothing	3h	47' ow — 60 ch	54 ohms	
		57 ow — "	52 "	
		57 — 32 dead	0 "	
		10 — 2		
		20 — 1		
		30 — 1		

#62 — 9) Tin & Tin

3° left	4h	02' as 1-40 ch	55 sh		Gas freely from both.
		12' as 1 "	" 50 "		
		12' - 5-8 lich	10 "		Heavy black flaky deposit & fences p.
		10-6 "			
		20-4 "			
		30-3 "			

#65 — 8) Silver & Ag

1° right	4h	14' as 1-40 ch	52 sh	
		24 as 1 "	" 34 "	
		24 - 5-8 slight		
		10-14 "		
		20-11		
		30-10		
		40-8		
		50-7		
		35' - 05-6		
		30-5		

#62 — 10) Tin & Tin

Gas given off so rapidly to make above return. Great heat evolved.

#63 — Iridium & Sb & Chloride of Iron

1° right	4h	55' as 1-40 ch	61 sh	
	5h	05 " " 2 "	58 "	
		10 1		

#63 — 4) Cu & Cu

5h	26' as 1-40 ch	55 sh	Silver deposit.
	32' as 1-32 "	10 "	
	52 - 5-1 slight		
	10-0		
	20-0		
	30-0		

Hunting at the Dam

Darlan & Cochran

#63 –

Pa. white	gh	03' 10' bel ch	44 ohms	very little
		42' av – 60 "	42 "	
		43' – – – – deaich	0 "	
		10 – 150		
		20 – 105 "		
		30 – 84		
		40 – 56		
		50 – 46		
	1)	43' – 00 – 40 "		
		15 – 37		
		30 – 32		
		45 27		
	2)	44 – 00 – 23		
		30 – 12		
	3)	45 – av – 14		
		30 – 12		
	4)	46 av – 10		
		30 – 9		
	5)	47 – av – 8		
	6)	48 – av – 7		
	7)	49 – av –		
	8)	50 – av – 5		
	9)	51 – av – 5		

2) Al & Ed

#63 –

Nothing	10h	av' av' bel ch	0 ohms	Poor turnout.
		10' av' bel "	0 "	Blackwood
		10 – 7 – 30 deach	0 "	
		10 – 26		
		30 – 14		
		30 – 11		
		40 – 10		
		50 – 9		
		11 av' – 8		

#63 –

2) Jo & Jo

Nothing	10	17' av' bel ch	95 ohms	
		29' av' – 60 "	51 "	
		29 – 3 – 6 deach		
		10 – 4		
		20 – 3		

#63 –

2) Ph & Ph

Nothing	10h	01' av' – 60 charge	50 ohms	
		41 av' – 60 "	21	
		41 – 5 – 2		
		10 – 1		
		20 –		

#63 – Mars & Sun

Nothing	10h	51' a.m. – 60 ch.	56 chs	
	11h	01' a.m. – 60 "	48 "	
		01 – 3.7 decl		
		10 – 1		
		20 – 1		
		30 + 0		

#63 – D. Sun & Sy.

nothing	11h	14' a.m. – 60 ch.	51 chs	Stars highly
		24' a.m. – 60 "	0 "	person pointing
		24 – 3.5 decl	0	very fine
		10 – 5		5th decimal
		20 – 4		
		30 – 3		

#63 – D. Sun & Sun

nothing	11h	36' a.m. – 60 ch.	56 chs	Stars highly
		36' a.m. – 60 "	50 "	definite
		36 – 2.6 decl	0 "	(Mars superb)
		10 – 22		
		20 – 17		
		30 – 15		
		40 – 14		
	37'	– 60 – 13		
		50 – 12		
	38'	– 60 – 11		
	39	– 60 – 14		
	40	– 60 – 15		
	41	– 60 – 16		

Time actual on two rapidly.

#64 – Jupiter & Sat & Moon of Sun – D. Sky & Ch

Nothing	2h	19' a.m. – 60 ch.	56 chs	Faint decimal-
		29' a.m. – 60 "	49 "	nation
		29 – 5.1		
		10 – 1		
		20 – 0		

#64 – D. Sky & Ch

50° left	2h	41' a.m. – 60 ch.	56 chs	Stars intensely
		51' a.m. – 60 "	51 "	bee hive
		51 – 3.6 decl	0 "	
		10 – 11		
		20 – 2		
		30 – 5		
		40 – 8		
	52'	50 – 9		
		30 – 6		

#64 – D. C. & C

1st night	2h	55' a.m. – 60 ch.	56 chs	
	3h	05' a.m. – 60 "	45 "	
		05' – 3.6 decl	0 "	
		10 – 3		
		20 – 3	"	
		30 – 2	"	
		40 – 2	"	

		1) Cu & Cu	
Nothing	3h	08' av. 60 ch. 50 ohms	Greenish colour
		15' av. 60 " 49 "	to the water
		18 — 3.5 back 0 "	
		10 — 4	
		30 — 3 "	
8/64		2) Fe & Fe.	
1° left	3h	22' av. 60 ch. 50 ohms	
		33 av. 60 " 48 "	
		33 — 5.4 back 0 "	
		10 — 4 "	
		20 — 3 "	
		30 — 3	
8/64		3) Pb & Pb	
nothing	3h	37' av. 60 ch. — 52 ohms	
		47 20" av. 60 " — 34 "	Hard precipitate.
		47 — 2.4 back 0 "	
		10 — 4	
		20 — 5 "	
		30 — 5 "	
		40 — 6 "	
8/64		4) Ni & Ni	
nothing	3h	49 av. 60 ch. — 49 ohms	Plates stained
		57 av. 60 " 48 "	faintly.
		57 — 4.5 back 0 "	
		10 — 3	
		20 — 2	
		30 —	

8/64		5) Ag & Ag	
1° right	4h	02' av. 60 ch. 50 ohms	
		16 av. 60 " 21 "	Faint heavy
		12 — 4.02 back 0 "	precip.
		10 — 3.3 "	
		20 — 4 "	Real colour
		30 — 10 "	deposit on
		40 — 9 "	neg. pol.
		15 — 50 — 7	
		30 — 5 "	
		40 av. — 4	
8/64		6) Zn & Zn	
1° right	4h	20' av. 60 ch. 50 ohms	Black film
		30' av. 60 " — 50 "	immediately
		33 — 3.71 back 0 "	
		10 — 20	
		20 — 18	Heavy precip
		30 — 17	
		40 — 17	
	1)	31' — 40 — 17	
		30 — 16	
	2)	32' — 40 — 16	
		30 — 18	
	3)	33' — 40 — 20	
	4)	34 — 40 — 15	
	5)	35 — 40 — 18	

Estate of Dr. Cameron — 3) 24-56

#65 – Lyme Regis Estate

Wednesday of nothing

Cell	Time	left	right	Remarks
7° right	5h 07' 00"	60 ch	54 ch	
	17 00"	60 "	54 "	
	17 00" 5	56 chain	5 "	Reddish
	10 – 35 "		"	
	20 – 30 "		"	
	30 – 34 "			
	40 – 33 "			
	3) 15' – 50 – 32 "			
	15 – 29 "			
	30 – 26 "			
	45 – 24 "			
	3) 19' – 60 – 22 "			
	30 – 16			
	3) 20' – 60 – 9			
	30 – 7			

#65 –

56° left

3) Cell & C

	5h 25' 00"	60 ch	54 chain	Pebble
	33' 00"	60 "	54 "	
	33 – 3	60 chain	6 "	
	10 – 110 "			
	20' – 105			
	30 – – 105			
	3) 34' 00 – 95			
	3) 35' 30 – 86			Gravel
	3) 35' 00 – 65			
	30 – 60			
	3) 36' 00 – 56			
	3) 37' 00 – 51			
	3) 38 – 00 – 44			

Friday, 16th June

3) Carlton & C

#65 – (new)

1° right	9h 39' 00"	60 ch	55 chain	
	49' 00"	60 "	42 "	
	49 – –	60 "	6 "	
	15 – 150			
	20 – 105			
	30 – 59			
	40 – 39			
	50 – 29			
	1) 5 – – 60 – 23			
	15 – 13			
	30 – 14			
	3) 51' 00 – – 9			
	30 – – 6			

#65 –

3) Cell & C

nothing	9h 54' 00"	60 ch	59 chain	
	18h 04' 00"	60 "	54 "	
	04 – –	13 chain		
	10 – 11			
	20 – 11			
	30 – 12			
	40 – 12			

1865 —		5) Leon & Jan		
6° right	10h 09' aw	60 ch	56 ohms	very little effect on pilots
	9' aw	60 "	58 "	
	19 — 55 — 22	1 ch	0	
	20 — 22	"	"	
	30 — 22	"	"	
	30 — 21	"	"	
	40 — 21	"	"	
	20 — 50 — 20	"	"	
	30 — 19	"	"	
	21 — 50 — 16	"	"	
	22 — aw — 15	"	"	
	23 — aw — 14	"	"	
1865 —		6) Pa & Ma		
working	10h 35' aw	60 ch	52 ohms	
	45' aw	38 "	0 "	
	45 — 46	1 ch	0	
	10 — 41			
	20 — 0			
1865 —		7) Wi & Ni		
1° right	10h 51' aw	60 ch	56 ohms	
	11h 01' aw	60 "	57 "	
	01 — 44	1 ch	0	
	10 — 2			
	20 — 4			
	30 — 5			

1865 —		8) Ag. & Ag.		
6° right	11h 09' aw	60 ch	56 ohms	Pilots Check-mated
	19' aw	60 "	12 "	
	29 — 22	1 ch	0	
	10 — 6			
	20 — 4			
	30 — 3			
1865 —		9) Jan & Ma		
1° left	11h 25' aw	60 ch	55 ohms	Pilots check-mated
	35' aw	60 "	52 "	
	35' — 1	2 ch	0 "	
	10 — 23			
	20 — 22			
	30 — 22			
	40 — 22			
1)	36 — 50 — 22			Pilots Checkmated
	30 — 21			
2)	37 — 50 — 22			
	30 — 23			
3)	38 — 50 — 23		0	
4)	39 — aw — 21			
5)	40 — 50 — 20			
6)	41 — 50 — 16		"	
7)	42 — aw — 8		"	
	15 — 0		"	
8)	44 — — 8			

#66 - Pressure solution to which is added an equal volume of water - moderate thickness

2° left	1h 22' 00"	60 ch	56 ohms		Black
	52' 00"	60 "	52 "		
	32	60 inch	0 "		
		10	9 "		
		20	5		
		30	5		
#66 —			Ol. & Sp.		
10° left	2h 17' 00"	60 ch	54 ohms		
	27' 00"	60 "	50 "		
	27	60 inch	0 "		
		10	2		
		20	4		
#68 —			C & C		
1° left	2h 32' 00"	60 ch	53 ohms		
	42 00"	60 "	49 "		
	42	60 dwell	0		
		10	32		
		20	16		
		30	8		
		40	6		
		50	4		
		60	3		

#67 - Measure & Time of Cancellation in Switchwire of Quintuplex

C & C

Nothing	2h 59' 00"	60 ch	45 ohms		
	59 00"	60 "	40 "		
	59				
		16	150 dwell		
		20	140		
		30	125		Carbon chloride
		40	100		= 3/4 3/4 1/2
		50	86		
1)	12	00	70		
		15	67		
		30	53		
		45	40		
2)	11	00	32		
		15	33		
		30	32		
3)	12	00	26		
		30	22		
4)	13	00	15		
		30	15		
5)	14	00	12		
		30	12		
6)	15	00	9		
7)	16	00	8		
8)	17	00	7		
9)	18	00	6		
10)	19	00	5		
13)	30	00	4		

2nd Charge of premium Slots P&L

1st Pd 1st	3	26	00	60	115
		36	00	30	120
		38			
					150
					135
					110
				50	90
1)	39		00	33	
				15	68
				30	57
				45	49
2)	38		00	43	
				15	37
				30	32
3)	39		00	27	
				30	22
4)	40		00	19	
			30	16	
5)	41		00	14	
			30	12	
6)	42		00	11	
			30	10	
7)	43		00	9	
			30	8	
8)	44		00	7	
9)	45		00	6	
11)	47		00	4	
13)	49		00	3	

3rd charge.

2nd Pd 1st	10	01	00	60	115
		11	00	60	41
		11			
					170
				30	135
				45	125
				50	115
1)	12		00	60	150
				15	77
				30	65
				45	54
2)	13		00	47	
				15	42
				30	37
3)	14		00	29	
				30	25
4)	15		00	22	
				30	20
5)	16		00	15	
6)	17		00	13	
			30	12	
7)	18		00	11	
8)	19		00	9	
9)	20		00	8	
10)	21		00	7	
11)	22		00	6	
12)	23		00	5	
13)	24		00	4	

The premium of 115 paid in advance.

4th Change

4h 32' 00"	60 ch	45 ch	
43 00"	60 "	39 "	
43 - - -	Quick	0	
10			
23	150		
30	135		
40	125		
50	110		
5) 44 - - 00	100		
15	82		
30	71		
45	57		
2) 45 - - 00	50		
15	44		
30	39		
3) 46 - - 00	32		
30	27		
4) 47 - - 00	23		
30	21		
5) 48 - - 00	18		
30	16		
6) 49 - - 00	14		
30	13		
7) 50 - - 00	12		
30	11		
8) 51 - - 00	10		
9) 52 - - 00	8		
10) 53 - - 00	7		
11) 54 - - 00	6		

5th Change

5h 00 00"	60 ch	45 ch	
13 00"	"		
13 - - -	Quick		
15	150		
30	140		
40	130		
50	108		
1) 14 - - 00	90		
15	82		
30	71		
45	62		
2) 15 - - 00	56		
15	47		
30	44		
3) 16 - - 00	34		
30	29		
4) 17 - - 00	25		
30	23		
5) 18 - - 00	20		
30	17		
6) 19 - - 00	16		
30	14		
7) 20 - - 00	13		
8) 21 - - 00	11		
9) 22 - - 00	9		
10) 23 - - 00	8		
11) 24 - - 00	7		

5th Change

9h 39' 00"	Quick	60 ch	45 ch
41 00"	60 "	40 "	
41 - - -	Quick	0	
23	150		
30	130		
40	115		
50	100		
1) 42 - - 00	90		
15	79		
30	68		
2) 43 - - 00	58		
30	42		
3) 44 - - 00	33		
30	28		
4) 45 - - 00	25		
30	21		
5) 46 - - 00	18		
30	14		
6) 47 - - 00	14		
30	12		
7) 48 - - 00	11		
8) 49 - - 00	9		
9) 50 - - 00	7		

6th Change

10h 00 00"	60 ch	45 ch	
16 00"	60 "	39 "	
16 - - -	Quick	0	
25	150		
30	140		
40	120		
50	95		
1) 17 - - 00	87		
15	76		
30	70		
45	61		
2) 18 - - 00	56		
30	46		
3) 19 - - 00	37		
30	30		
4) 20 - - 00	26		
30	22		
5) 21 - - 00	19		
30	17		
6) 22 - - 00	15		
30	13		
7) 23 - - 00	11		
8) 24 - - 00	9		
9) 25 - - 00	7		

20 Jany 2 d.
18 " Jany d.
1853 Sickness of Sh

C & R

11h 0 2 00 - 60 ch 53 ohms
12 " - 60 " 48 "
12 - 50 - 60 ch
50 - 18 "
30 - 11 "
20 - 9 "
50 - 6 "

Clear water

11h 30 m - 60 ch 51 ohms
32 " - 60 " 47 "
35 - 7 - 14
50 - 11
20 - 9

Broad little [illegible] [illegible]
not [illegible]
Previous [illegible] e.p.

Previous observations [illegible]

C & R

10h 83 m - 60 ch 51 ohms
43 m - 60 - 47 "
43 - 3 - 26 [illegible]
10 - 16
20 - 11
30 - 9
40 - 8
50 - 8
11h 40 - 60 - 7
15 - 6
30 - 6

Clear ch.

10h 50 m - 60 ch 48 ohms
11h 50 m - 60 " 44 "
50 - 62 [illegible]
5 - 17
15 - 13
30 - 10
40 - 9
50 - 7
21 - 60 - 8
15 - 7
30 - 6

7th - Check of points on all [illegible] see [illegible] p. 154.

10h 11 m - 60 ch 43 ohms
31 m - " " 34 "
21 - - 150 [illegible] 8 "
10 - 150
24 - 150
- 135
30 - 115
50 - 95
21 - 60 - 35
15 - 73
30 - 20
40 - 55
22 - 50 - 52
[illegible] - 41
26 - 50 - 35
30 - 27
28 - 60 - 22
30 - 19
29 - 50 - 16
30 - 13
37 - 60 - 12

67. Fresh solution (conc. Trellonica of iron)

3° night	5°	12 am	65 ch	49 ohms
		30	60	45
		45	11 ch	
			15	7
			30	6
			45	6
			50	5

61/2. Trichloride of [illegible] Sp. [illegible] with PKE

1° night	3h	33 am	40 ch	46 ohms
		43 am		42 "
		45	11 ch	0 "
		11/50		
		50/20		
		31	90	
		40	71	
		50	56	
	4)	4h	60	42
		15	38	
		30	32	
		45	26	
	5)	5h	00	23
		15	20	
		30	18	
	3)	6h	30	14
		30	11	

The trichloride of [illegible] of antimony. Now was is S.O.

68 Persian plates and Persian solution to which is added iron [illegible]

3° night	3h	56 am	60 ch	45 ohms
	4h	06 am	60 "	39 "
		06	15 ch	0 "
			20	110
			30	96
			40	67
			50	56
	1)	07	00	43
			15	34
			30	29
			45	23
	2)	08	00	19
			30	15
	3)	09	00	12
			30	10
		10	am	5

£19 – Shell & part – – – – – 60 grains ±
Brass frame – – – – 70 " ±
Percussion ac – – – – 30 " ±
Iron ducts – – – – 15 " ±
Hammer, Chloride 15 – ±
Link Chloride 25 – ±

Carbon
&
Carbon

1st Night

	4h 21' w" – 60 ch			
	31' w" – 60 "			
	31' – – – – – 60 ch			
	54 – 150			
	30 – 130			
	40 – 110			
	50 – 92			
1.)	52' – 60 – 79			
	15 – 61			
	30 – 58			
	30 – 46			
	45 – 38			
2.)	33' – 60 – 32			
	15 – 26			
	30 – 23			
3.)	34' – 60 – 19			
	30 – 15			
4.)	35' – 60 – 13			
	30 – 11			
5.)	36' – 60 – 10			
	30 – 9			
6.)	37' – 60 – 8			
	30 – 7			
7.)	38' – 60 – 7			

Premium plates much
Probably has
Trichloride of
Antimony
There is the
faintest colour
from as you
see 60.
19 – 16 3

2nd Charge

4h 40' w" – 60 ch	41 ch	
50' w" – " 39 "		
50' – – – – 60 ch	0	
54 – 150		
30 – 130		
40 – 115		
50 – 92		
1.) 51 – 60 – 79		
15 – 61		
30 – 52		
45 – 44		
2.) 52' – 60 – 32		
15 – 33		
30 – 29		
45 – 26		
3.) 53' – 60 – 23		
15 – 21		
30 – 19		
4.) 54' – 60 – 16		
30 – 14		
5.) 55' – 60 – 12		
30 – 11		
6.) 56' – 60 – 10		
30 – 9		
7.) 57' – 60 – 9		

3rd Charge

4h 59' w" – 60 ch	41 ch
5h 19' w" – 60 " 39 "	
19' – – – 60 ch	
24 – 150	
30 – 130	
40 – 110	
50 – 92	
1.) 10' – 60 – 81	
15 – 65	
30 – 55	
45 – 46	
2.) 11' – 60 – 39	
15 – 35	
30 – 31	
45 – 27	
3.) 12' – 60 – 24	
15 – 20	
30 – 20	
45 – 19	
4.) 13' – 60 – 15	
30 – 16	
5.) 14' – 60 – 12	
30 – 12	
6.) 15' – 60 – 11	
30 – 10	
7.) 16' – 60 – 9	
30 – 9	

#69 – Part of previous coal + 30% more chlorine of the Chlorine Carbons.

Nothing	6h 15m	each	37 oh	
	37	20	35	No gas given off
	28	12.105	6	
		80-120		
		80-90		
		40-70		
		50-70		
		50-75		
		15-63		This set is useful to determine if the addition of some reducing agent allows in being given off. In this case the time in which the experiment of carbon.
		30-54		
		45-53		
2)	31	50-63		
		15-31		
		30-32		
		45-28		
3)	31	50-25		
		30-21		
4)	31	50-17		
		30-15		
5)	33	50-13		A decided improvement is shown, due to strong antimony solution.
		30-12		
6)	34	50-11		
		30-10		
7)	35	50-9		

#69 – 2nd solution of Chlorine of preceding Set.

	6h 15m	each	37 oh	6h 29m each 30 oh system
	29	12	35	54
	28	6	6	54
		10-120		6
		80-92		50-90
		30-87		50-80
		30-71		40-70
		50-77		50-79
1)	31	50-76	1)	50 50-[illegible]
		15-71		15-69
		30-66		30-64
2)	31	50-67	2)	31 50-67
		30-67		30-67
3)	31	50-39		30-63
		30-30	3)	50 30-35
4)	33	50-26		30-30
		30-18	4)	50 30-25
5)	34	50-15		30-21
		30-13	5)	50 30-17
6)	34	50-12		30-16
		30-11	6)	50 30-12
7)	35	50-10		30-12
		30-9	7)	50 30-11
				30-11
				50 30-10

89 - Previous solution + 10% mercurous nitrate solution

1st charge		2nd charge	
10' 37'	60 ... 87	10' 19'	60 ... 87
	30 ... 60		30 ... 60
	30' ... 85		30' ... 85
	6 ... 105		6 ... 105
	30 ... 115		10 ... 115
	30 ... 105		30 ... 105
	30 ... 100		30 ... 100
	30 ... 96		30 ... 94
1) 37'	60 ... 87	1)	60 ... 77
	15 ... 72		15 ... 70
	30 ... 63		30 ... 64
	30 ... 55		30 ... 55
2) 39'	30 ... 45	2) 31'	30 ... 55
	30 ... 44		30 ... 41
	30 ... 35		30 ... 32
3) 40'	30 ... 57	3)	30 ... 25
	30 ... 20		30 ... 20
4) 41'	60 ... 18	4) 13'	30 ... 17
	30 ... 16		30 ... 15
5) 42'	60 ... 18	5) 0'	60 ... 16
	30 ... 12		60 ... 14
6) 43'	60 ... 11	6) 65'	60 ... 12
	30 ... 10		30 ... 11
7) 44'	60 ... 9	7) 06'	60 ... 10
	30 ... 9		30 ... 10

89 - Previous solution + 10% mercurous nitrate solution

1st charge		2nd charge	
11' 37'	60 ... 87	11' 37'	60 ... 87
	31' 30'	60 ... 31	30 ... 32
	31' ...		6
	30 ... 150		10 ... 125
	45 ... 125		30 ... 117
	50 ... 115		30 ... 110
1) 37'	60 ... 105		60 ... 105
	15 ... 86		60 ... 93
	30 ... 70	1)	30 ... 92
	40 ... 56		15 ... 84
			30 ... 75
2) 38'	30 ... 45	2)	30 ... 67
	15 ... 38		15 ... 59
	30 ... 29	3) 13'	30 ... 50
3) 39'	60 ... 22		15 ... 50
	30 ... 16		30 ... 46
4) 40'	60 ... 13		60 ... 35
	30 ... 11		30 ... 36
5) 41'	60 ... 9	4) 50'	60 ... 24
			60 ... 18
	30 ... 8	5) 56'	30 ... 16
6) 42'	60 ... 7		30 ... 14
	30 ... 7	6)	30 ... 12
7) 43'	60 ... 6	7)	30 ... 10
			30 ... 9

3rd charge

4th charge

C&E

1st 39 00" 61 ch. 35 links
49 00" 60 " 31 "
47 " " 60 ch. 0 "
6.94 "
10.91
20.89
30.75
40.65
50.71
1) 50 00" 75 "
15.72
30.75
45.69
2) 51 00" 60
15 57
30.52
3) 52 00" 42
30.35
4) 53 00" 39
30.33
5) 54 00" 19
30.16
6) 55 00" 14
30.12
7) 56 00" 11
30.10
8) 57 00" 9

2nd 58 00" 60 ch. 35 links
59 00" 60 " 30 "
59 " " 60 ch. 0 "
10.85
20.90 "
30.80
40.66
50.81
1) 1 00" 77 "
15.77
30.73
45.68
2) 2 00" 62
15.56
30.54
45.53
3) 3 00" 47
30.40
4) 4 00" 33
30.27
5) 5 00" 23
30.20
6) 6 00" 17
30.14
7) 7 00" 12
30.11
8) 8 00" 11

Previous solution of 15th & 16th lines
of equal areas

1st 8 00" 60 ch. 35 links
56 00" 60 " 31 "
56 " " 60 ch. 0 "
6.84
10.92
20.88
30.85
1) 9 00" 81
15.77
30.72
45.66
2) 10 00" 61
30.53
3) 11 00" 46
30.36
4) 12 00" 32
30.26
5) 13 00" 19
30.16
6) 14 00" 10
30.10
7) 15 00" 03
30.2
8) 16 00" 7
30.7
9) 17 00" 6
10) 18 00" 2

Contravariate
reciprocal
= 1/2 & 1/4 & 1/6

3rd 16 00" 60 ch. 35 links
17 00" 60 " 31 "
17 " " 60 ch. 0 "
10.90
20.80
30.70
40.70
1) 18 00" 61
15.53
30.60
45.56
2) 19 00" 46
30.41
3) 20 00" 36
30.27
4) 21 00" 27
30.21
5) 22 00" 17
30.14
6) 23 00" 10
30.9
7) 24 00" 5
30.4
8) 25 00" 1
30.1
9) 26 00" 5
10) 27 00" 2

3rd Change — 4th Change

3rd Change		4th Change	
3h 41' 00" 20 ch	32 blows	4h 11' 00" 20 ch	32 blows
51 00 20	18	21 00 20	27
1 00 20	1	31 00 20	1
10-63		5 59	
20-62		10-58	
30-61		20-57	
40-60		30-56	
50-60		40-55	
42 00-61		50-54	
10-59		42 00-57	
20-58		10-57	
30-57		20-57	
40-57		30-56	
50-56		40-56	
43 00-56		50-56	
10-55		43 00-55	
20-54		10-55	
30-53		20-54	
40-52		30-53	
50-51		40-52	
44 00-51		50-51	
10-50		44 00-50	
20-49		10-49	
30-48		20-48	
40-47		30-47	
50-46		40-46	
45 00-45		50-45	
10-44		45 00-44	
20-43		10-43	
30-42		20-42	
40-41		30-41	
50-40		40-40	
46 00-39		50-39	
10-38		46 00-38	
20-37		10-37	
30-36		20-36	
40-35		30-35	
50-34		40-34	
47 00-33		50-33	
10-32		47 00-32	
20-31		10-31	
30-30		20-30	
40-29		30-29	
50-28		40-28	
48 00-27		50-27	
10-26		48 00-26	
20-25		10-25	
30-24		20-24	
40-23		30-23	
50-22		40-22	
49 00-21		50-21	
10-20		49 00-20	
20-19		10-19	
30-18		20-18	
40-17		30-17	
50-16		40-16	
50 00-15		50-15	
10-14		50 00-14	
20-13		10-13	
30-12		20-12	
40-11		30-11	
50-10		40-10	
51 00-9		50-9	
10-8		51 00-8	
20-7		10-7	

5th Change — 6th Change

5th Change		6th Change	
4h 35' 00" 20 ch	31 blows	4h 57' 00" 20 ch	31 blows
45 00 20	26	59 00 20	25
53		5h 5	
10-58		10-57	
20-57		20-57	
30-57		30-56	
40-56		40-56	
44 00-56		50-56	
10-55		44 00-55	
20-55		10-55	
30-54		20-54	
40-53		30-53	
45 00-53		40-53	
10-53		45 00-53	
20-52		10-52	
30-51		20-51	
46 00-50		30-50	
10-49		40-49	
20-48		46 00-48	
30-47		10-47	
40-46		20-46	
50-45		30-45	
47 00-44		40-44	
10-43		50-43	
20-42		47 00-42	
30-41		10-41	
40-40		20-40	
50-39		30-39	
48 00-38		40-38	
10-37		50-37	
20-36		48 00-36	
30-35		10-35	
40-34		20-34	
50-33		30-33	
49 00-32		40-32	
10-31		50-31	
20-30		49 00-30	
30-29		10-29	
40-28		20-28	
50-27		30-27	
50 00-26		40-26	
10-25		50-25	
20-24		50 00-24	
30-23		10-23	
40-22		20-22	
50-21		30-21	
51 00-20		40-20	
10-19		50-19	
20-18		51 00-18	
30-17		10-17	
40-16		20-16	
50-15		30-15	
52 00-14		40-14	
10-13		50-13	
20-12		52 00-12	
30-11		10-11	
40-10		20-10	
50-9		30-9	
53 00-8		40-8	
10-7		50-7	
20-6		53 00-6	

Wednesday 1st July, 1885

£69 - Continuation of February Tests.

7½ Chipe				6¾ chipe			
Time	Reff = Revolution			Time		Reff.	Ex.
9th 10 00	clock	42 strokes		9th 46 00		20	20
30 10	40	36		56 00		20	
12	clock	0		56			
	10 46						
	30 43						
	50 42						
	10 40						
	30 40						
1) 20	50 40			1) 57	10 45		
	15 40				15 42		
	30 40				30 42		
2) 20	10 40			2) 57	10 42		
	30 40						
3) 25	10 37			3) 57	10 41		
	30 37				30 40		
4) 26	10 35			4) 10	10 39		
	30 37				30 37		
5) 27	10 35			5) 11	10 36		
	30 31				30 34		
6) 27	10 27			6) 12	10 35		
	30 25				30 30		
7) 29	10 23			7) 13	10 27		
	30 21				30 22		
8) 30	30 18			8) 14	10 22		
9) 31	10 15			9) 15	10 19		
10) 32	10 11			10) 16	10 15		
12) 34	10 7			12) 18	10 10		
				15) 11	10 6		

£69 - 9th Chipe. 1½ chipe.

10th 11 00	clock	0 strokes		10th 24 00	clock	19 strokes	
11	10 00			56	10 00	21	
15	clock	0			clock		
	10 43				45		
	30 43				45		
	50 43				45		
1) 57	10 43			57	10 45		
	30 43				30 45		
2) 58	10 43			58	10 45		
	30 42				30 45		
3) 59	10 42			59	10 43		
	30 41				42		
4) 12	10 40			12	42		
	30 38				41		
5) 13	10 36			5) 13	10 39		
	30 34				34		
6) 14	10 32			6) 14	10 37		
	30 30				30		
7) 15	10 26			7) 15	10 27		
	30 25				25		
8) 16	10 23			8) 16	10 23		
	30 21				20		
9) 17	10 19			9) 17	10 17		
10) 18	10 15			10) 18	10 15		
11) 19	10 13			11) 19	10 13		
12) 20	10 11			12) 20	10 10		
13) 21	10 9			13) 21	10 9		
15) 23	10 7			15) 23	10 7		
17) 25	10 5			17) 25	10 5		

11th charge

11h	33 min	clock 3 volus
	33 min	60 - 22
	33	6 - 6
		0.46
		0.46
		0.46
1j		0.46
		0.46
2j	5	60 - 45
		30 - 45
3j	36	60 - 44
		30 - 42
4j		60 - 40
		30 - 39
5j		60 - 38
		30 - 36
6j		60 - 31
		30 - 34
7j	40	60 - 34
8j		60 - 31
9j		60 - 15
10j	43	60 - 111
11j		60 - 1
12j	45	60 - 10
13j		60 - 8
14j	48	60 - 6
15j	50	5

12th charge

12h	0 min	clock 2 volus
	16	60 - 56
	16	6 - 6
		10.50
		30 - 50
1j	15	60 - 50
		30 - 49
		45 - 48
2j	16	60 - 47
		30 - 46
3j	17	60 - 45
		30 - 44
4j	17	60 - 42
		30 - 40
5j	18	30 - 38
		30 - 35
6j	20	60 - 32
		30 - 29
7j	21	60 - 27
8j	22	60 - 22
9j	23	60 - 18
10j	24	60 - 14
11j	25	60 - 11
12j	26	60 - 10
13j	27	60 - 8
14j	28	60 - 7
15j	29	60 - 7

13th charge

1h	57 min	clock 3 volus
2h	0 min	60 - 53
		6 - 6
		10.51
		30 - 51
		30 - 51
1j		60 - 51
		30 - 50
2j	1	60 - 50
		30 - 49
3j		60 - 47
		30 - 45
4j		60 - 43
		30 - 40
5j		60 - 38
		30 - 35
6j		60 - 30
		30 - 26
7j		60 - 23
		30 - 20
8j	12	60 - 18
9j	13	60 - 15
10j	14	60 - 13
11j	15	60 - 11
12j	16	60 - 8
13j	17	60 - 7
14j	18	60 - 7
15j	19	60 - 7

14th charge

1h	4 min	clock 3 volus
	4	60 - 57
		6 - 6
		10.56
		30 - 56
		30 - 56
1j		60 - 56
		30 - 54
2j		60 - 54
		30 - 52
3j		60 - 49
		30 - 47
4j		60 - 45
		30 - 42
5j		60 - 42
		30 - 37
6j		60 - 32
		30 - 27
7j		60 - 25
		30 - 22
8j		60 - 19
9j		60 - 16
10j		60 - 13
11j		60 - 11
12j		60 - 9
13j		60 - 7
14j		60 - 7
15j		60 - 7

69-C

	Cut perchloride	45 %
	Uranium " chloride	10 %
	Iodide "	16 %
	Hydrogen chloride reel	8 %
	Water	20 %
	Solvent reel C	1 %

Colour of Bulbs with Uranium Compounds

1st Charge – 10 minutes

3h 22 av – 60 – 33 ohms	4h 16 av – 60 ol 35 ohms
38 av – 60 – 37 "	26 av – 60 – 26
32 – – disch – "	26 – – disch "
10 – 150 "	10 – 105
30 – 110	20 – 102
30 – 105	30 – 100
50 – 105	40 – 96
1) 30 – 00 – 100 "	1) 37 – 00 – 91
30 – 92	30 – 84
2) 25 – 00 – 10	2) 25 – 00 – 75
50 – 70	30 – 67
3) 36 – 00 – 59	3) 37 – 00 – 56
4) 37 – 00 – 45	4) 30 – 00 – 40
5) 30 – 00 – 39	5) 31 – 00 – 29
6) 29 – 00 – 31	6) 35 – 00 – 28
7) 30 – 00 – 16	7) 32 – 00 – 16
8) 41 – 00 – 12	8) 34 – 00 – 13
9) 42 – 00 – 9	9) 35 – 00 – 10
10) 43 – 00 – 8	10) 36 – 00 – 9
11) 42 – 00 – 7	11) 37 – 00 – 7
12) 43 – 00 – 7	
13) 48 – 00 – 5	13) 38 – 00 – 7
	14) 41 – 00 – 5

3rd Charge | 4th Charge

4h 45 av – 60 – 3 ohms	5h 15 av – 60 – 3 ohms
37 av – 60 " 28 "	35 – 60 " 20 "
37 – – disch 6 "	32 – – disch 6 "
10 – 104 "	10 – 102
30 – 100	20 – 100
30 – 95	30 – 95
40 – 90	40 – 90
1) 50 – 00 – 86 "	1) 50 – 00 – 70 "
15 – 84	15 – 71
30 – 81	30 – 72
2) 50 – 00 – 76	2) 50 – 00 – 77
30 – 67	30 – 64
3) 50 – 00 – 59 "	3) 50 – 00 – 61
30 – 50	30 – 52
4) 59 av – 43	4) 32 – 00 – 5
5) 00 – 00 – 32	5) 00 – 00 – 70
6) 01 av – 35 "	6) 32 – 00 – 53
7) 02 – 00 – 30	7) 32 – 00 – 41
8) 32 – 00 – 15	8) 32 – 00 – 17
9) 34 – 00 – 11	9) 32 – 00 – 13
10) 35 – 00 – 9	10) 32 – 00 – 11
11) 36 – 00 – 8	11) 32 – 00 – 9
12) 37 – 00 – 7	12) 32 – 00 – 8
13) 38 – 00 – 7	13) 32 – 00 – 7
14) 39 – 00 – 7	14) 32 – 00 – 7
15) 40 – 00 – 6	15) 33 – 00 – 7

Thursday, 2nd July

5th charge		6th charge	
9th 14 w[illegible] ch	34 shots	9th 47 w[illegible] ch	30 shots
14 w[illegible]	56 "	57 w[illegible]	34 "
14 [illegible] ch	0 "	57 [illegible] ch	0 "
10.93	" " "	10.93	" "
20.90		20.90	
30.89		30.88	
40.87		40.86	
50.85		50.85	
1j 25 w[illegible]	" " "	1j 52 w[illegible]	" " "
15.79		15.80	
20.76		20.77	
2j 20 w[illegible]		2j 57 w[illegible]	
30.64		30.66	
3j 27 w[illegible]	" " "	3j 20 w[illegible]	" "
30.49		30.56	
4j 22 w[illegible]		4 01 w[illegible]	
5j 39 w[illegible]		5j 02 w[illegible]	
6j 30 w[illegible]	" " "	6j 03 w[illegible]	" " "
7j 31 w[illegible]		7 [illegible] w[illegible]	
8j 30 w[illegible]		8j 05 w[illegible]	
9j 33 w[illegible]	" " "	9j 06 w[illegible]	" "
10j 30 w[illegible]		10j 07 w[illegible]	
11j 35 w[illegible]		11j 08 w[illegible]	
12j 36 w[illegible]	" " "	12j 09 w[illegible]	
		13j 12 w[illegible]	

9th charge		7th charge	
10th 17 w[illegible] ch	50 shots	10th 54 w[illegible] ch	29 shots
57 w[illegible]	23 "	11th 04 w[illegible]	14 "
57 [illegible] ch	0 "	[illegible]	
10.95		10.97	
20.92		20.92	
30.89		30.92	
40.85		40.90	
50.86		50.87	
1j 21 w[illegible]	" " "	1j 51 w[illegible]	" " "
15.81		15.81	
20.75		20.77	
2j 59 w[illegible]		2j 57 w[illegible]	
30.66		30.76	
3j 00 w[illegible]		3j [illegible] w[illegible]	" " "
30.53		30.57	
4j 22 w[illegible]		4j 22 w[illegible]	
5j 32 w[illegible]		5j 33 w[illegible]	
6j 35 w[illegible]		6j 37 w[illegible]	
7j 34 w[illegible]		7j 34 w[illegible]	
8j 35 w[illegible]		8j 35 w[illegible]	
9j 34 w[illegible]		9j 35 w[illegible]	
10j 37 w[illegible]		10j 37 w[illegible]	
11j 38 w[illegible]		11j 38 w[illegible]	
12j 39 w[illegible]		12j 39 w[illegible]	
13j 42 w[illegible]		13j 42 w[illegible]	

9th charge – 10′

11h 25 au – 60 sq elms
45 au – 60 – 33
[illegible] 6.0
10 – 98
20 – 86
30 – 13
40 – 02
50 – 87
1) 4h – 00 – 76
15 – 82
30 – 79
2) 4h – 00 – 70
30 – 67
3) 4h – 00 – 60
30 – 52
4) 5h – 00 – 47
5) 5h – 00 – 33
6) 5h – 00 – 28
7) 5h – 00 – 23
8) 5h – 00 – 18
9) 5h – 00 – 13
10) 5h – 00 – 10
11) 5h – 00 – 8
12) 5h – 00 – 7

10th charge (?)

12h 07 au – 60 sq elms
14 au – 60 – 21
17 au – 60 – 6
10 – 97
20 – 96
30 – 95
40 – 93
50 – 90
1) 12h – 00 – 88
15 – 84
30 – 81
2) 12h – 00 – 76
30 – 69
3) 12h – 00 – 62
– 54
4) 1h – 00 – 45
5) 1h – 00 – 40
6) 1h – 00 – 30
7) 1h – 00 – 24
8) 1h – 00 – 20
9) 1h – 00 – 18
10) 1h – 00 – 16
11) 1h – 00 – 14
12) 1h – 00 – 11
13) 1h – 00 – 9
14) 1h – 00 – 7

11th charge

12h 15 au – 60 sq elms
45 au – 60 – 31
50 au – 60 – 6
– 100
10 – 97
20 – 94
30 – 91
40 – 90
1) 5h – 00 – 85
15 – 84
30 – 80
2) 5h – 00 – 74
30 – 66
3) 5h – 00 – 59
30 – 57
4) 5h – 00 – 44
5) 6h – 00 – 35
6) 6h – 00 – 26
7) 6h – 00 – 21
8) 6h – 00 – 17
9) 6h – 00 – 14
10) 6h – 00 – 11
11) 6h – 00 – 9
12) 6h – 00 – 7
13) 6h – 00 – 5

12th charge

1h 55 au – 60 sq elms
[illegible] au – 60 – 22
[illegible] – 100
10 – 97
20 – 97
30 – 93
40 – 91
50 – 90
1) 6h – 00 – 85
15 – 84
30 – 80
2) 6h – 00 – 72
30 – 66
3) 6h – 00 – 58
30 – 49
4) 6h – 00 – 43
5) 7h – 00 – 30
6) 7h – 00 – 23
7) 7h – 00 – 21
8) 7h – 00 – 17
9) 7h – 00 – 14
10) 7h – 00 – 12
11) 7h – 00 – 9
12) 7h – 00 – 6
13) 7h – 00 – 5
14) 7h – 00 – 4

26 minutes' charge –

18th + 14th charge, of 10'	15th + 16th charges
3h 29' av. 60 ch 25 links	3h 30' av. 60 ch 36 links
39' av. 60 " 20 "	40' av. 60 " 19 "
49' av. 60 " 17 "	50' av. 60 " 15 "
49' ... Lesch "	50' ... Lesch "
10..102 "	10..103 "
20..100	20..102
30..100	30..101
45..98	45..98
1) 50' av. 96 "	1) 50' av. 96 "
30..92	30..97
2) 50' av. 90	2) 50' av. 89
30..81	30..86
3) 50' av. 80	3) 50' av. 83
4) 50' av. 78	4) 50' av. 78
5) 50' av. 62	5) 50' av. 74
6) 50' av. 54	6) 50' av. 65
7) 50' av. 47	7) 50' av. 59
8) 50' av. 36	8) 50' av. 42
9) 50' av. 32	9) 50' av. 25
10) 50' av. 29	10) 50' av. 31
12) 01' av. 21	12) 00' av. 33
14) 02' av. 17	14) 01' av. 18
16) 05' av. 12	16) 06' av. 14
18) 07' av. 8	18) 06' av. 9
20) 09' av. 6	20) 10' av. 7
22) 11' av. 5	22) 12' av. 6
25) 14' av. 4	25) 15' av. 4

30 minutes' Charge –

17th, 18th + 19th Charges of 10'	
4h 35' av. 58 ch 24 links	
36' av. 60 " 17 "	
37' av. 60 " 16 "	
38' av. 60 " 14 "	
38' ... Lesch "	32) 24' av. 15 "
10..103 "	34) 26' av. 12
20..101	36) 24' av. 9
30..100	38) 26' av. 7
45..99	
1) 50' av. 98 "	30) 27' av. 6
30..89	32) 30' av. 6
2) 50' av. 93	34) 32' av. 5
30..90	
3) 50' av. 87 "	
4) 02' av. 81	
5) 02' av. 73	
6) 00' av. 67 "	
7) 05' av. 60	
8) 06' av. 53	
9) 07' av. 49 "	
10) 07' av. 45	
12) 10' av. 37 "	
14) 12' av. 30	
16) 14' av. 24	
18) 16' av. 21 "	
20) 18' av. 20	

30th minute charge — Friday 3rd July

20th 21st 22nd 23rd 10' charge

9h	21	[illegible]	30	[illegible]	
	19	[illegible]	20		
	58	[illegible]	13		
	[illegible]	[illegible]	10		
	[illegible]	[illegible]	[illegible]	12j	56 [illegible]
	[illegible]	[illegible]	[illegible]	13	[illegible]
	[illegible]	[illegible]	[illegible]	14j	51 [illegible]
	[illegible]	[illegible]	[illegible]	15j	[illegible]
	[illegible]	[illegible]	[illegible]	16j	[illegible]
	[illegible]	[illegible]	[illegible]	17j	[illegible]
10h	39	[illegible]	[illegible]		
	15	[illegible]	[illegible]		
	[illegible]	[illegible]	[illegible]		
2j	40	[illegible]	[illegible]	20j	[illegible]
	[illegible]	[illegible]	[illegible]		
3j	[illegible]	[illegible]	[illegible]	21j	[illegible] 7
	[illegible]	[illegible]	[illegible]	22j	[illegible] 6
4j	40	[illegible]	[illegible]	23j	[illegible] 6
5j	[illegible]	[illegible]	[illegible]		
6j	[illegible]	[illegible]	[illegible]	24j	[illegible] 5
7j	45	[illegible]	[illegible]		
8j	[illegible]	[illegible]	[illegible]		
9j	47	[illegible]	[illegible]		
10j	[illegible]	[illegible]	[illegible]		
11j	49	[illegible]	[illegible]		

20th 10' charge — 25th 10' charge

10h	36	[illegible]	[illegible]	11h	[illegible]
	36	[illegible]	13		15 [illegible] 9
	25	[illegible]	[illegible]		[illegible]
		12.92	[illegible]		[illegible] 92
		[illegible] 79			[illegible] 91
		[illegible] 87			[illegible]
		10.85			[illegible]
		[illegible] 3			[illegible] 90
1j	37	[illegible] 71	[illegible]	1j	[illegible] 72 [illegible]
		5 78			17 [illegible]
		[illegible]			[illegible] 77
2j	[illegible]	[illegible]		2j	[illegible] 71
		[illegible]			36 63
3j	37	[illegible] 54	[illegible]	3j	17 [illegible] 58 [illegible]
		20 53			[illegible] 53
4j	4[illegible]	[illegible] 47		4j	[illegible] 47
5j	[illegible]	[illegible] 37		5j	[illegible]
6j	[illegible]	[illegible] 29	[illegible]	6j	[illegible] 28 [illegible]
7j	[illegible]	[illegible] 25		7j	[illegible] 23
8j	[illegible]	[illegible]		8j	[illegible] 19
9j	45	[illegible] 17	[illegible]	9j	[illegible]
10j	[illegible]	[illegible] 14		10j	[illegible] 13
11j	[illegible]	[illegible] 9	[illegible]	11j	[illegible] 9
12j	50	[illegible] 6	[illegible]	12j	[illegible] 6

5 minutes charges.

25th ½ charge		26th ½ charge	
1h	40' au[illegible] ch.	12h	08' au[illegible] ch.
	45' au[illegible]		14 au[illegible]
	45 [illegible]		14 [illegible]
	[illegible] 90		10.90
	[illegible] 66		20.76
	[illegible] 70		30.76
	[illegible]		[illegible]
	[illegible] 71		50.77
1j	[illegible] 68	1j	10' au 73
	[illegible] 62		[illegible] 68
	[illegible] 53		30.66
2j	47 [illegible]	2j	16 au 54
	[illegible] 34		30.41
3j	45 [illegible]	3j	[illegible] au 35
	30.23		20.30
4j	[illegible]	4j	18 au 26
5j	[illegible] 15	5j	18 [illegible] 21
6j	51 [illegible] 10	6j	20 au 15
7j	52 au 7	7j	21 au 11
8j	53 au 5	8j	22 au 8
9j	54 au 5	9j	23 au 6
10j	55 au work	10j	24 au 5

26½ charge		26½ charge	
1h	56' au 60 ch.	1h	40' au [illegible]
	57 au [illegible]		42 au [illegible]
	57 [illegible]		[illegible]
	10.91		1.96
	20.89		[illegible] 92
	30.72		[illegible] 25
	40.78		[illegible] 86
	50.76		[illegible] 75
1j	56 au 73	1j	[illegible] 72
	15.62		63
	30.55		[illegible]
2j	57 au 49	2j	[illegible]
	[illegible] 35		[illegible] 32
3j	08 au 27	3j	[illegible] 27
	20.21		20.24
4j	07 au 17	4j	50 au 16
5j	08 au 12	5j	51 au 10
6j	09 au 8	6j	52 au 8
7j	09 au 6	7j	53 au 7
8j	15 au 5	8j	54 au 5
9j	06 au 5	9j	55 au 4
10j	07 au 4		

Monday, 6th July, 1885

Determination Resist of cell

Using our standard Daniell cell
Resist of Daniell cell, German
units given by

$C_1 = \frac{E}{5+R} = 55$ our units

$C_2 = \frac{E}{5+R+5} = 43$ " "

$\therefore 5+R = \frac{5 \times 43}{55-43} = 17.5$ ohms

Let E = E.M.F. of standard cell = 1.09 ?

E' = " " " secondary cell when
nearly discharged

r = resist of secondary cell

Then $C_3 = \frac{E-E'}{17.5+r} = 17$,

$C_4 = \frac{E+E'}{17.5+r} = 23$ $\therefore E' = .15\,E = .16$ volts

and $r = 3.57$ ohms

Determination of resistance of cell at different periods of discharge by observing a known resistance, noting current.

Known resist = 5 ohms

"5" ampères charge

Time	Reading	Extra current	Resistance of cell
Discharge			
10h 05'	10 - 96	- - 0	
	20 - 90	- - 0	
	30 - 85	- - 5 ohms	3.2 ohms
	40 - 83	- - 0	
4) 55'	50 - 82	- - 5 "	3.4 "
	15 - 71		
	25 - 66		
	30 - 79	- - 5 "	4.5 "
	45 - 56		
	55 - 46		
5) 07'	20 - 25	- - 5 "	5.9 "
	15 - 44		
	30 - 39		
	45 - 35		
5) 55'	60 - 19	- - 5 "	6.9 "
	30 - 16		
6) 09'	60 - 23		

10h 09' 38" .70 — 5 ohms 12 — 8.6 ohms
35 18
5) 10 30 11 — 5 ohms 17 — 8.9 ohms
15 10
57 12
20 65 — 5 ohms 12 — 11.7 ohms
15 10

"5" ohm 10 #28

11h 50' 00" charge 2 ohms
59' 20" 10 " 18 "
59' 00" diesel 0 "
30 02
35 72
38 37 — 5 ohms
12h 00 36 " "
30 30 " "
01 00 32 " "
30 30 " "
35 60 — 0 " — 7 = 4.9 ohms
40 77 — 5 "
02 00 26 — 5 "
03 00 22 — 5 "
30 20 — 5 "
04 00 18 — 5 "
05 00 20 — 0 "

Determination of most economical charge or rate of charging.

"5" minute charge #29

1h 46' 00" diesel 0 ohms 1h 50' 00" 60 ohms 0 diesel
46' 00" 10 " 19 " 03 00" 60 " 15 "
46' 00" diesel 0 " 03 00" diesel 0 "
10.92 " " " 10 97 " "
20 90 " 20 92
30 70 30 76
45 77 45 79
1) 47 00 69 1) 05 00 70
30 46 30 57
2) 48 00 38 2) 05 00 46
30 30 30 33
3) 49 00 24 3) 06 00 36
30 15 30 22
4) 50 00 13 4) 07 00 19
5) 51 00 8 5) 08 00 12
6) 52 00 6 " 6) 10 00 8
7) 53 00 5 " 7) 11 00 6
8) 11 00 5

8h 36' aw 2 ... ch 3 ch	8h 56' aw 1 ... 40 ch 3 ch
41' aw 1 ... 31 "	57' aw 1 ... 20 "
46' ... ch 0 "	01' ... ch 0 "
54 "	03 "
55 - 78	10 - 78
50 - 73	20 - 71
45 - 61	45 - 60
1) 40' ... 50 - 48	1) 40' ... 50
30 - 31	30 - 36
2) 45' ... 25	2) 03 ... 20
30 - 22	30 - 28
3) 40' ... 17	3) 10 ... 14
30 - 12	30 - 13
4) 45' ... 9	4) 20' ... 10
30 - 7	30 - 8
5) 50 ... 6	5) 25 ... 5
6) ... 5	6) 27 ... 4

8h 22' aw 1 ... 50 ch 10 ch	8h 43' aw 2 ... 50 ch 5 ch
29' aw 1 ... 3 "	48' aw 1 ... 2 "
29' ... ch 0 "	49' ... ch 0 "
106 "	106
107	101
30 - 8	30 - 4
45 - 92	45 - 92
1) 30' ... 40 - 84	1) 49 ... 30 - 74
30 - 75	30 - 73
2) 31 ... 20 - 61	2) 50 ... 20 - 62
30 - 46	30 - 47
3) 32 ... 10 35	3) 51 ... 10 - 31
30 - 26	30 - 30
4) 33 ... 00 - 21	4) 52' ... 00 - 25
30 - 17	30 - 22
5) 34' ... 00 17	5) 53 ... 00 - 19
6) 35 ... 00 - 11	6) 54 ... 00 - 16
7) 36 ... 00 - 8	7) 55 ... 00 - 11
8) 37 ... 00 - 6	8) 56 ... 00 - 8
9) 38 ... 00 - 5	9) 57 ... 00 - 7

5" minutes charges

4h 58' 00" 30 ch 107 chs	5h 14' 00" 30 ch 108 ch
59' 00" 30 " 90 "	19' 00" 30 " 154 "
59' ---- disch 1 "	19' ---- disch 0 "
00 78 " " "	00 76 " "
01 18	01 67
02 57	02 57
145 145	145 145
1) 00' 00" 35 " "	1) 00' 00" 36 " "
30 26	30 28
2) 01' 00" 19	2) 01' 00" 21
30 14	30 17
3) 02' 00" 13 " "	3) 02' 00" 12 " "
30 7	30 8
4) 03' 00" 5	4) 03' 00" 6
30 4	30 5
5) 04' 00" 2	5) 04' 00" 4 " "

Tuesday, 15 July 1895

Observing through Cotton resistance

5" minute charges

8h 31' 00" 44 ch 70 chs	9h 54' 00" 0 ch 79 chs
36' 00" 40 " 78 "	59' 00" 40 " 78 "
36' ---- disch 8 "	59' ---- disch. 8 "
00 36 " " "	00 33 " "
01 34	01 35
30 33	30 34
02 45 32	02 35
1) 37' 00" 31 " "	1) 30' 00" 31 " "
30 28	30 30
2) 38' 00" 21	2) 01' 00" 26
30 17	30 23
3) 39' 00" 13 " "	3) 02' 00" 21 "
30 10	30 17
4) 40' 00" 7	4) 03' 00" 12
30 7	30 10
	9
5) 41' 00" 6 "	30 7
	5) 04' 00" 7 " "

7	5	00	00	10 h	00 m 00 s
		39	00		49 00
		29			49
			10.37		10.37
			20.36		20.36
			30.35		30.35
			45.34		45.34
1)	30	00	32	1)	50 00 32
			30.30		30.29
2)	31	00	27	2)	51 00 27
			30.24		30.22
3)	32	00	21	3)	52 00 22
			30.18		30.19
4)	33	00	15	4)	53 00 17
			30.12		30.15
5)	34	00	10	5)	54 00 12
			30.9		30.11
6)	35	00	8	6)	55 00 9
			30.7		30.7
7)	36	00	6	7)	56 00 7

11 h	11 m	00 s	11 h	46 m	00 s
	15	00		51	00
			10.35		10.39
			20.36		20.35
			30.37		30.37
			45.37		45.37
1)	17	00	36	1)	52 00 36
			30.35		30.35
2)	18	00	34	2)	53 00 34
			30.33		30.32
3)	19	00	31	3)	54 00 30
			30.29		30.27
4)	20	00	27	4)	55 00 25
			30.25		30.23
5)	21	00	23	5)	56 00 22
6)	22	00	20	6)	57 00 20
7)	23	00	17	7)	58 00 17
8)	24	00	14	8)	59 00 15
9)	25	00	11	9)	60 00 12
10)	26	00	8	10)	61 00 9
11)	27	00	7	11)	62 00 7
				12)	63 00 6

"5" Smith & Harper.

1h	55' 00"	70 ch	37 ohms	2h 25' 00"	70 ch	35 ohms
	56' 00"	70 "	34 "	30' 00"	70 "	32 "
	57'	disch.	5 "	35	disch.	5 "
	10-41	"	"	10-41	"	"
	20-39			20-40		
	30-38			30-39		
	45-38			45-38		
1)	59' 00	37	"	1) 31' 00"	38	
	30-36			30-37		
2)	57' 00	36		2) 32' 00	35	
	30-35			30-34		
3)	59' 00	33		3) 33' 00	33	
	30-31			30-32		
4)	00' 00	29		4) 34' 00	31	
	30-27			30-29		
5)	01' 00	25		5) 35' 00	27	
6)	02' 00	21		6) 36' 00	22	
7)	03' 00	17		7) 37' 00	19	
8)	04' 00	12		8) 38' 00	17	
9)	05' 00	9		9) 39' 00	13	
10)	06' 00	7		10) 40' 00	11	
11)	07' 00	6		11) 41' 00	8	
				12) 42' 00	6	

Wednesday, 7th July.

Determination of returning capacity of a cell.
Cell used, being Leclanché one.

"Five minute Charges."

Time	Weight	Battery Current	Time	Weight	Battery Current
9h 41' 00"	60 ch	53 ohms	10h 26' 00"	60 ch	50 ohms
46' 00"	60 "	48 "	27' 00"	60 "	47 "
46' 00"	disconnected		27' 00"	disconnected	
51'	disch.	0 ohms	32'	disch.	0 ohms
10-75	"	"	10-70	"	"
20-68			20-64		
30-62			30-65		
35-58			35-61		
1) 52' 00	45	"	1) 33' 00	50	"
30-28			30-43		
2) 53' 00	19		2) 34' 00	32	
30-15			30-26		
3) 54' 00	12	"	3) 35' 00	23	"
30-9			30-17		
4) 55' 00	8		4) 36' 00	13	
30-7			30-10		
5) 56' 00	6		5) 37' 00	9	
30-6			30-8		
6) 57' 00	5	"	6) 38' 00	7	"

10h 53' 00" — 60 ch 57 ohms
56' 00" — 60 " 49 "
58' 00" — disconnected
11h 03' — 5 — 9 ch 0 ohms
10 - 82 " "
20 - 77
30 - 73
45 - 65
1) 04' — 00 - 59 " "
30 - 46
2) 05' — 00 - 37
30 - 31
3) 06' — 00 - 28 "
30 - 23
4) 07' — 00 - 19
30 - 15
5) 08' — 00 - 12
30 - 11
6) 09' — 00 - 10 "
30 - 9
7) [illegible] — 00 - 8
30 - 7
8) 11' — 00 - 5 "

11h 30' 00" — 60 ch 57 ohms
35' 00" — 60 " 49 "
38' 00" — disconnected
40' — 5 — 9 ch 0 ohms
10 - 85 " "
20 - 78
30 - 73
45 - 66
1) 41' — 00 - 60 "
30 - 4[illegible]
2) 42' — 00 - 38
30 - 32
3) 43' — 00 - 27
30 - 23
4) 44' — 00 - 20
30 - 17
5) 45' — 00 - 14
30 - 11
6) 46' — 00 - 9 "
30 - 9
7) 47' — 00 - 8
30 - 7
8) 48' — 00 - 7

12h 00' 00" — 60 ch 57 ohms
11' 00" — 60 " 45 "
[illegible] 00" — disconnected
16' — [illegible] 9 ch 0
10 - 35 "
20 - 77
30 - 72
45 - 65
1) 17' — 00 - 55 "
30 - 45
2) 18' — [illegible] - 36
30 - 31
3) 19' — 00 - 26
30 - 22
4) 20' — 00 - 20
30 - 16
5) 21' — 00 - 13
30 - 10
6) 22' — 00 - 8 " "
30 - 7
7) 23' — 00 - 7
30 - 6
8) 24' — 00 - 6
30 - 6
9) 25' — 00 - 5

Maximum charge is probably reached

Five minute charges

10 minutes between disconnection & reconnection

1h 59' 00"	00 ch	500 hrs	2h 19' 00"	00 ch	500 hrs
34 00"	00 "	49 "	20' 00"	00 "	49 "
34 00"	Disconnected		20' 00"	Disconnected	
44	5-72 ch	0 chs	22	5-62 ch	0 "
	10-77 "	" "		10-70 "	" "
	20-74			20-71	
	30-63			30-65	
	35-59			37-57	
1) 45	00-51	" "	1) 23	00-50	" "
	30-42			30-41	
2) 46	00-33		2) 24	00-34	
	30-29			30-29	
3) 47	00-25	" "	3) 25	00-25	" "
	30-21			30-22	
4) 48	00-17		4) 26	00-19	
	30-14			30-16	
5) 49	00-11		5) 27	00-14	
	30-9			30-11	
6) 50	00-7	" "	6) 28	00-9	" "
	30-7			30-8	
7) 51	00-7		7) 29	00-7	
8) 52	00-6		8) 30	00-7	
9) 53	00-5	" "	9) 31	00-6	" "
			10) 32	00-5	

2h 44' 00"	00 ch	500 hrs
52 00"	00 "	49 "
52 00"	Disconnected	
3h 02	5-59 ch	0 chs
	10-70 "	" "
	30-72	
	30-67	
	35-58	
1) 33	00-52	" "
	30-41	
2) 34	00-34	
	30-29	
3) 35	00-25	
	30-23	
4) 36	00-20	
	30-17	
5) 37	00-14	
	30-11	
6) 38	00-9	" "
	30-7	
7) 39	00-6	
8) 40	00-6	
9) 41	00-5	" "
10) 42	00-4	

Maximum charge
Leobbly per hrs

"Five Minute" Charges.

15 minutes disconnected

3h 27' av.	60 ch. 50 ohms	4h 10' av.	60 ch. 50 ohms
32 av.	60 " 49 "	15 av.	60 " 49 "
32 av.	disconnected	15 av.	disconnected
47'	5 71 disch. 0 ohms	30	5 79 disch. 0 ohms
10	73 "	10	91 "
20	65	20	62
30	59	30	56
45	52	45	49
1) 48	60 45 "	1) 31	60 45 "
30	37	30	36
2) 49	60 30	2) 32	60 30
30	26	30	26
3) 50	60 22 "	3) 33	60 18
30	21	30	20
4) 51	60 18	4) 34	60 18
30	15	30	15
5) 52	60 13	5) 35	60 13
30	11	30	11
6) 53	60 9 "	6) 36	60 10 "
30	7	30	9
7) 54	60 6	7) 37	60 7
30	6	30	6
8) 55	60 5 "	8) 38	60 5 "

"Five Minute" Charges

30 minutes disconnected in five minutes

4h 53	60 ch. 50 ohms
58 av.	60 " 49 "
58 av.	disconnected
18	5 90 disch. 0 ohms
10	70 "
20	62
30	54
45	46
1) 19	60 43 "
30	36
2) 20	60 30
30	26
3) 21	60 24 "
30	21
4) 22	60 19
30	17
5) 23	60 14
30	12
6) 24	60 10 "
30	8
7) 25	60 7
30	6
8) 26	60 5

Thursday, 9th July 1891

30 minutes disconnected, [illegible] clock

9h 27' 00" - 60 ch 51 chns
47 00" - " 49 "
47 - - 5-130 60 ch 0 "
10-120 "
57 - 00 - 59 "
57' - 00 - 10 "
[illegible] 15' 00 - 4 "

10h 25' 00 - 60 ch 51 chns
30' 00" - " 49 "
30' - - disconnected
11h 00 - 5-70 clock 0 chns
10-22
00-57
30-52
45-45
1) 01 - 00-42 "
30-34
2) 12 - 00-30
30-25
3) 00 - 00-22
30-20
4) 00 - 00-15
30-16
5) 00 - 00-12
30-12
6) 00 - 00-10
30-5
7) 00 - 00-6
30-5
8) 00 00-5

Five Minutes Charges

30 minutes disconnected after clock 11

11h 31' 00" - 60 ch 50 chns
00' 00" - 60 " 59 "
00' 00" - disconnected
50 - - 5-70 clock 0 chns
15-61 " "
00-52
30-46
45-41
1) 57' - 00-38 " "
30-33
2) 58' - 00-29
30-25
3) 59' - - 21 " "
30-19
4) 00 - 00-17
30-16
5) 01' - 00-14
30-12
6) 02' - 00-11 " "
30-9
7) 03' - 00-8
30-7
8) 04 - 00-6
30-6
9) 05 - 00-5

Five Minute Charge

1 hour disconnected before discharge

1h	35'	00"	60 chg	50 ohms	3h	15' 00"	60 ch 50 oh
	40'	00"	60 "	49 "		20' 00"	60 "
	40'	00"	disconnected			20' 00"	disconnected
2h	40'	00"	54 disch	0 ohms	4h	20' 00"	54 disch 0 ohms
		10"	45 "	" "		10"	47 " "
		20"	38			20"	37
		30"	34			30"	32
		45"	30			45"	29
3)	41'	00"	27	" "	1)	21' 00"	26 " "
		30"	23			30"	22
2)	42'	00"	20		2)	22' 00"	19
		30"	17			30"	17
3)	43'	00"	15	" "	3)	23' 00"	15 " "
		30"	13			30"	13
4)	44'	00"	11		4)	24' 00"	11
		30"	10			30"	10
5)	45'	00"	9		5)	25' 00"	10
		30"	8			30"	8
6)	46'	00"	7	" " "	6)	26' 00"	7
		30"	6			30"	6 " "
7)	47'	00"	5		7)	27' 00"	5
		30"	4			30"	5
8)	48'	00"	4		8)	28' 00"	4

Effect of reversal of charging current

Five Minute Charge & discharge

9h	14'	00"	50 ch	50 ohms	9h	4' 00"	50 ch 50 oh
	19'	00"	60 "	79 "		46' 00"	60 "
	19'	00"	disch	0 "		46' 00"	disch 0 "
		10"	99 "	" "		10"	87 " "
		20"	95			20"	80
		30"	85			30"	73
		45"	76			45"	64
1)	20'	00"	68	" "	1)	47' 00"	67 " "
		30"	46			30"	62
2)	21'	00"	27		1)	48' 00"	45
		30"	19			30"	21
3)	22'	00"	15	" "	2)	49' 00"	16 " "
		30"	12			30"	16
4)	23'	00"	10		3)	50' 00"	13
		30"	8			30"	11
5)	24'	00"	7		5)	51' 00"	9
		30"	6			30"	8
6)	25'	00"	6	" "	6)	52' 00"	7 " "
		30"	5			30"	7
7)	26'	00"	5		7)	53' 00"	6

"Five Minute" charges
Direct charges

10h 15' 20" — 60 ch 50 ohms	10h 45' 20" — 60 ch 49 ohms
20' 20" — 60 " 49 "	49' 20" — 60 " 40 "
20' — 5 spd ch 0 "	49 — 5 40 ch 0 "
10 — 102 " " "	10 — 102
20 — 96	20 — 96
30 — 90	30 — 91
45 — 76	45 — 81
1) 21 — 60 — 72 " " "	1) 50 — 60 — 74 " " "
15 — 63	15 — 64
30 — 54	30 — 55
2) 22 — 60 — 40	3) 51 — 60 — 43
30 — 29	30 — 33
3) 23 — 60 — 21 " " "	5) 52 — 60 — 24 " " "
30 — 17	30 — 9
4) 24 — 60 — 13	4) 53 — 60 — 15
30 — 11	30 — 12
5) 25 — 60 — 9	5) 54 — 60 — 10
30 — 8	30 — 7
6) 26 — 60 — 7	6) 55 — 60 — 7 " " "
30 — 7	30 — 7
7) 27 — 60 — 6	7) 56 — 60 — 6
30 — 6	30 — 6
8) 28 — 60 — 5	8) 57 — 60 — 5
30 — 5	30 — 5
9) 29 — 60 — 4 " " "	9) 58 — 60 — 5

"Five Minute" Charges 217
Reversed - current Charges.

11h 10' 20" — 60 ch 50 ohms	11h 25' 20" — 60 ch 51 ohms
15' 20" — 60 " 50 "	30' 20" — 60 — 49 "
15 — 5 50 ch 0 "	30 — 5 50 ch 0 "
15 — 50 " " "	10 — 79 " " "
20 — 49	20 — 69
30 — 3	30 — 60
45 — 5	45 — 50
1) 16 — 60 — 44 " " "	1) 31 — 60 — 40 " " "
15 — 3	15 — 25
30 — 3	30 — 20
2) 17 — 60 — 2	2) 32 — 60 — 15
30 — 2	30 — 10
3) 18 — 60 — 1	3) 33 — 60 — 6 " " "
30 — 1	30 — 5
4) 19 — 60 — 1	4) 34 — 60 — 5

11h	49' am	Lock	51 chains	17h	10' am Lock 51 chains
	54 am		60 " 49 "		15 am 60 " 49 "
	54	Lock	60 "		15 Lock 60 "
		90	" "		15 45 "
	20	79			30 85
	30	69			30 76
	45	61			45 67
1)	55	50	57 " "	1)	16 20 60 "
	15	43			15 52
	20	34			30 47
2)	56	20	21	2)	17 20 30
	30	15			30 21
3)	57	00	11 " "	3)	[illegible]
	30	7			30 11
4)	58	00	6	4)	19 00 8
	30	5			30 6
5)	59	00	2	5)	[illegible] 7
					30 5
				6)	21 00 6

1h	25' am	Lock	2 chs	8h	08' am Lock 2 chains
	30 am		10 " 45 "		13 am 10 " 49 "
	30	Lock	10 "		13 Lock 10 "
		96	" "		94
	20	87			30 80
	30	78			45 71
	45	68		1)	14 00 62 "
1)	51	00	52 " "		15 53
	15	51			30 44
	30	42			45 33
2)	52	00	30	2)	15 00 22
	30	20			30 16
3)	53	00	14 " "		45 12
	30	11		3)	16 00 10
4)	54	00	1		30 [illegible]
	30	7		4)	17 00 7
5)	55	00	6		30 6
	30	5		5)	18 00 6
6)	56	00	2 " "		30 5

Resistance of Coils by Lamond's Bridge of Burn

Time	Reading	Extra Resist.	Profile Reading	Amount	Resistance Resist.	Observations
4h 11m 20s	60 ch	50 ohms	Constant		Silver	2.5015
21 20	60	49	Resist			2.3 ohms
21 20	discharge					
10	110	0		Empire	Ohms	Volts
20	39	5	105	.190	3.9	.5551
30	100	0				
40	96	0				
50	75	0				
1) 22 00	35	5	84	.151	3.6	.5444
15	80	0				
30	78	0				
45	33	5	75	.135	3.9	.5267
2) 23 00	71	0				
10	68	0				
15	31	5	66	.117	4.4	.5155
30	60	0				
55	53	0				
3) 24 00	25	5	51	.092	4.9	.4451
25	47	0				
30	23	5	45	.081	5.2	.4121
4) 25 00	39	0				
15	37	0				
20	19	5	34	.061	6.3	.3864
5) 26 00	18	0				
05	18	5	28	.047	9.0	.4431

Saturday, 11th July 1885.

Continuation of Recording

9h 32 20	60 ch	57 ohms						
32 20	50	47						
32	discharge							
10	108	0						
12	42	5	107	.193	3.2	.618		
15	101	0						
20	96	0						
30	92	0						
1) 33 00	80	0						
15	76	0						
18	68	5	85	.153	3.7	.567		
22	83	0						
30	75	5	82	.147	3.8	.532		
2) 34 00	75	0						
15	65	0						
30	22	5	65	.112	4.8	.576		
45	62	0						
50	29	5	60	.11	4.7	.517		
3) 35 00	58	0						
4) 36 00	42	0						
05	22	5	41	.107	5.8	.406		
40	36	0						
45	20	5	35	.05	7.3	.365		
5) 37 15	22	0						
20	15	5	32	.038	10.7	.446		

 Solution given on p. 182.

h							$R = \frac{-dv_2}{dv_1 - dv_2}$
10	01' 00"	-60	ch	5 ohms			
	11 00	discharge					
	8	-105	0	"	Amps.	Ohms.	Volts
	10	40	-5	"	108	.194	3.9 .573
	18	-105	0	"			
	20	38	-5	"	100	.187	3.0 .561
	30	-100	0	"			
	35	37	-5	"	99	.178	3.0 .534
	55	92	0	"			
12	20	36	-5	"	91	.164	3.2 .525
	25	86	0	"			
	30	35	-5	"	85	.153	3.5 .535
13	20	70	0	"			
	04	32	-5	"	69	.126	4.2 .529
	30	65	0	"			
	35	30	-5	"	63	.115	4.5 .510
14	05	56	0	"			
	07	26	-5	"	55	.099	4.5 .446
	25	49	0	"			
	30	24	-5	"	46	.086	5.0 .430
15	13	41	0	"			
	15	21	-5	"	40	.072	5.5 .396
	57	23	0	"			
16	20	18	-5	"	32	.058	6.4 .381
	43	26	0	"			
		17	-5	"	28	.049	7.5 .371

Carbon Plates. see p. 182.

17	28	23	0	"					
	30	15	-5	"	23	.040	9.4	.376	
	55	91	0	"					
18	20	15	-5	"	20	.036	10.4	.374	
	30	17	0	"					
	35	12	-5	"	17	.031	12.0	.372	
	55	[illegible]	0	"					
19	30	9	-5	"	13	.023	11.2	.258	
	28	3	0	"					
	30	8	-5	"	12	.022	10.0	.220	
	32	11	0	"					
20	00	10	0	"					
	03	6	-5	"	10	.018	7.5	.135	
	15	9	0	"					

Wednesday, 13th [illegible]

"30 minute" change

1h 36' av. 60 d 50 chs
3h 06 av. 60 " 46 "
16 - 10 - 112 dch 0 "
20 - 108 " " "
30 - 110
50 - 104
1) 07' - av. 102 " "
30 - 100
3) 09 - av. 92
5) 11 - av. 78
8) 14 - av. 57
10) 16' av. 47 " "
12) 19' av. 33
14) 23 - av. 23
19) 35' - av. 17 " "
20) 1h av. 16

"10 minutes" change

10 division dich changes
4h 30' av. 60 ch 45 chs
8h 30' av. 60 " 37 "
30 - dich 0 "
40 - 115 " " "
50 - 112
2) 31' - av. 112
2) 32 - av. 107
4) 34 - av. 96
5) 35 - av. 89
7) 37 - av. 80
9) 39 - av. 72
11) 41 - av. 70
15) 45 - av. 60
16) " " 53 " "
25) 52 - av. 42
26) 56 - av. 34
30) av. av. 27 " "

"Ten hour" change

4h 10' av. 60 ch 45 chs
5h 10' av. 60 " 35 "
10 - dich 0 " "
12 - 115 " " "
20 - 115
30 - 115
45 - 115
1) 11 - av. 114 " "
15 - 112
20 - 110
45 - 108
2) 12 - av. 106
15 - 104
30 - 102
3) 13' - av. 100 " "
30 - 97
4) 14' - av. 94
30 - 90
5) 15' - av. 87
30 - 85
6) 16 - av. 83
30 - 81
7) 17' - av. 79
30 - 77
8) 18' - av. 75
30 - 73
9) 19' - av. 72 dich 0 ch
30 - 70 " " "
10) 20' - av. 69
30 - 65
11) 21 - av. 67
12) 22 - av. 65 " "
13) 23 - av. 62
14) 24 - av. 60
15) 25 - av. 58 " "
16) 26 - av. 55
17) 27 - av. 52
18) 28 - av. 50 " "
21) 30 - av. 46
22) 32 - av. 42
24) 34 - av. 37 " "
26) 36 - av. 33
28) 38 - av. 32
30) 40 - av. 27 " "
34) 44 - av. 20
39) 49 - av. 13
42) 52 - av. 11
45) 55 - av. 9 " "

Resist and E.M.F. Sunday, 14th Feb.

	60 ch	40 ohms		Current	Resist	Emf
9h 12' 00"	60 ch	40 ohms				
42' 00"	60	39				
42 ... 6"	60 ch.	0				
8"	109	0		Current	ohms	volts
10"	39.5	5	109	.197	3.9	.570
13"	107	0				
15"	39.3	5	107	.194	2.9	.563
18"	106	0				
20"	105	0				
28"	38.7	5	104	.187	3.0	.561
30"	103	0				
45"	103	0				
48"	38.3	5	102	.184	3.0	.552
1) 43 --- 15	101	0				
17	38	5	101	.182	3.0	.546
30	100	0				
33	37	5	100	.180	3.0	.540
2.) 44 -- 00	95	0				
03	36	5	95	.171	3.1	.530
28	92	0				
3) 45' -- 30	35	5	91	.164	3.2	.525
4) 46 -- 30	86	0				
32	34	5	84	.151	3.4	.513
5.) 47 -- 00	73	0				
6.) 48 -- 03	33	5	74	.133	4.0	.532

2h 49' 00"	68	0 ohms				
03	32	5	68	.122	4.4	.537
9.) 51 - 00"	60	0				
03	[illegible]	5	60	.108	4.4	.475
10.) 52' 00"	56	0				
03	47	5	56	.101	4.6	.465
11.) 53 -- 00"	50	0				
03	45	5	50	.090	5.0	.450
12.) 54 -- 27	43	0				
30	[illegible]	5	43	.077	5.2	.390
14.) 56' 00"	37	0				
03	21	5	37	.067	6.5	.435
57	33	0				
15.) 57' 20	30	5	33	.059	7.7	.454
57	57	0				
16.) 58' 00	17	5	27	.049	8.5	.416
51	13	0				
18.) 00' 00	15	5	23	.041	9.4	.385
50	20	0				
20.) 02 - 00	14.5	5	20	.036	13.0	.468
57	15	0				
21.) 03' 00	13.5	5	15	.032	15.0	.480
57	16.5	0				
23.) 04 00	[illegible]	5	16.5	.030	11.5	.345
24.) 06' 15	13					
16	8	5	12.5	.023	9.0	.207
26.) 08 00	11					
03	7	—	10	.018	8.7	.157

#69-D Wednesday, 15th July

1) Water - distilled 50 grms = 25 %
2) Hydro-chloric acid c.c. 14 " = 7 %
3) Lactic acid c.c. 2 " = 1 %
4) Manganese chloride c.c. 18 " = 9 %
5) Lime chloride c.c. 32 " = 16 %
6) Antimony perchloride c.c. 84 " = 42 %
Tot. 200 grms = 100 %

Specific gravity = 1.75

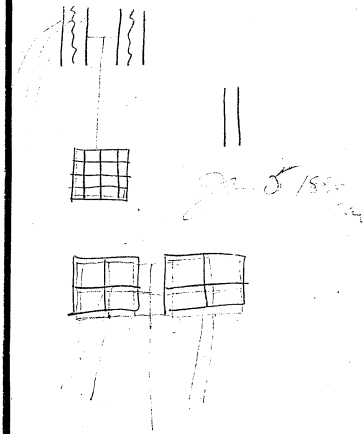
First two components to be mixed and third dissolved in them by heating. The last three to be added in their order, dissolving by heating as before.

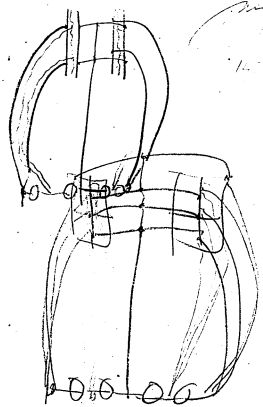
Time	Wgt.	Extra weight	Time	Wgt.	Extra weight
2h 42' 00"	60 gr	4 grms	5h 55' 00"	[illegible]	[illegible]
52' 00"	50 "	43 "	15' 00"	60 "	[illegible]
52'	65 "	5 "	15'	[illegible]	[illegible]
55'	"		16'	[illegible]	
30	50		15	40	
30	60		30	65	
45	75		45	113	
1) 53' 00	62		1) 16' 00	72	
15	55		15	[illegible]	
30	49		30	63	
2) 54' 00	41		2) 17' 00	52	
30	35		30	42	
3) 55' 00	31		3) 18' 00	36	
30	26		30	[illegible]	
4) 56' 00	23		4) 19' 00	29	
30	21		30	25	
5) 57' 00	19		5) 20' 00	23	
30	17		30	21	
6) 58' 00	16		6) 21' 00	20	
7) 59' 00	14		7) 22' 00	18	
8) 60' 00	11		8) 23' 00	16	
9) 61' 00	9		9) 24' 00	14	
10) 62' 00	5		10) 25' 00	12	
			11) 27' 00	12	

3rd Chase – Determination of Resist & E.m.f.

Time	Left	Extra Resist Left	Current	Resist	E.m.f.
3h 14' 00"	60 ohms	45 ohms			
58' 00"	60	12			
58	Broke				
	8 90°	0			
	13 51	5	90°	Tangent Chaus Battle	
	19 90°	0			
	20 44	5	90°		
	50 150	0			
	45	5	.050	.270	1.82 .491
	53 120	0			
	45 35	5	.120	.216	3.04 .471
	58 56	0			
5) 57'	00 30	5	.162	.135	.405
	9 69	0			
	30 28	5	.69	.124	3.02 .375
	59 53	0			
3) 56'	00 22	5	.53	.095	3.55 .342
	29 44	0			
	30 14	5	.44	.079	3.80 .330
	58 39	0			
3) 57'	00 15	5	.39	.072	3.12 .219
	29 33	0			
	30 13	5	.33	.0594	3.25 .193

3h 57'	00"	28	0 ohms	Tangent Chaus	Battle	
	01	12	5	.0504	3.45	.191
	28	25	0			
	30	10	5	.0450	3.22	.150
	58	23	0			
5) 55'	00	9.5	5	.0414	3.52	.155
	28	22				
	30	9	5	.0316	3.43	.139
	58	20	0			
4) 56'	00	8.5	5	.0260	3.70	.135
	28	17				
	30	8		.0342	3.53	.123
	58	15				
3) 57'	00	7.6		.0324	3.65	.120
	28	14				
	30	7.4	5	.0360	3.25	.115
	58	6				
3) 57'	00	7		.0336	3.38	.112
	58	16				
4) 57'	00	6.4		.0259	4.21	.109
	58	13				
10) 58'	00	6.2		.0234	4.36	.104
	58	12.5				
11) 01	00	5.8		.0225	4.33	.097
	58	10				
14) 04	00	5	5	.0185	5.00	.090

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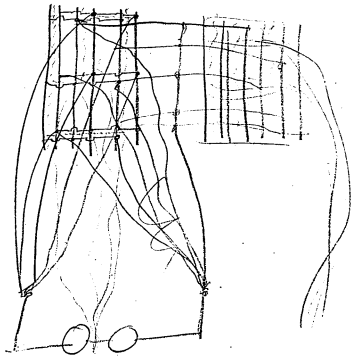

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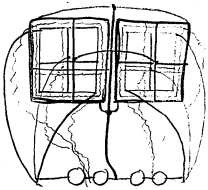

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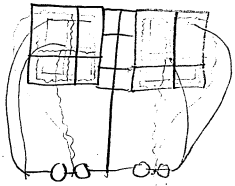

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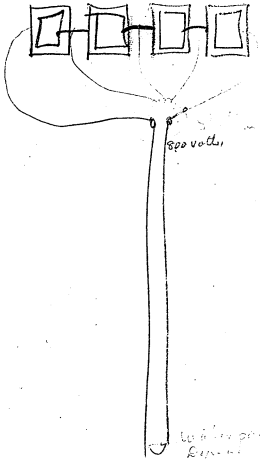
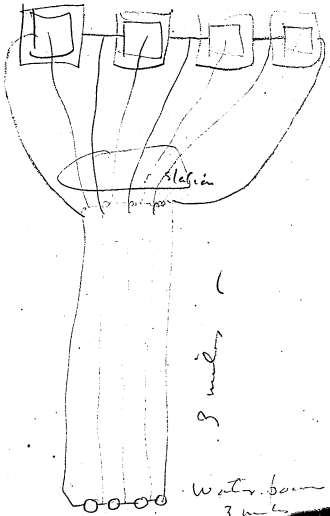
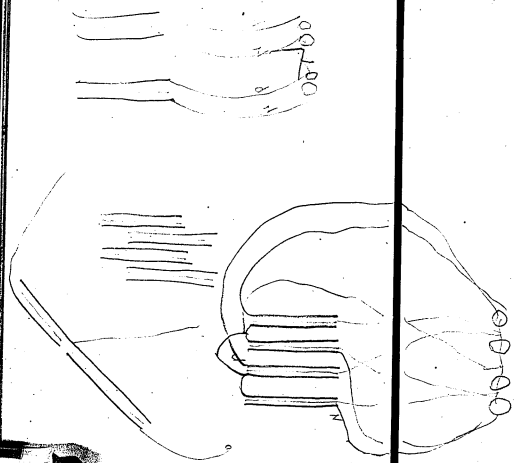
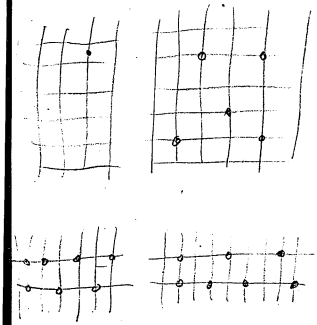
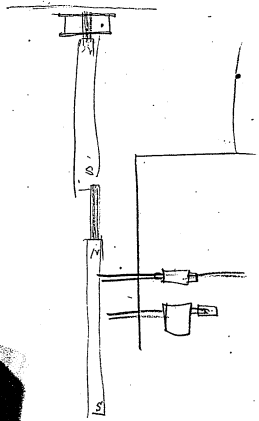

200 volts


Water-barrel
3 inches







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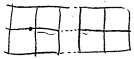

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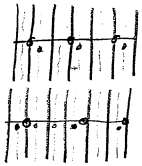

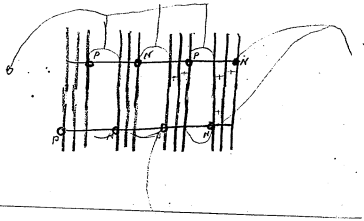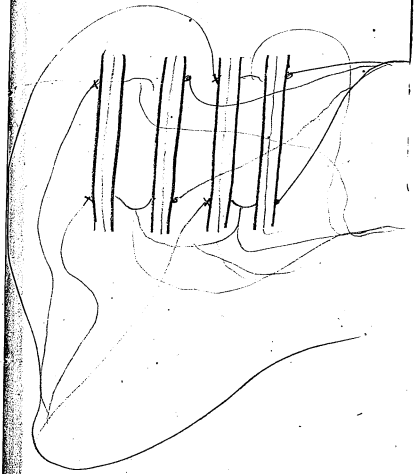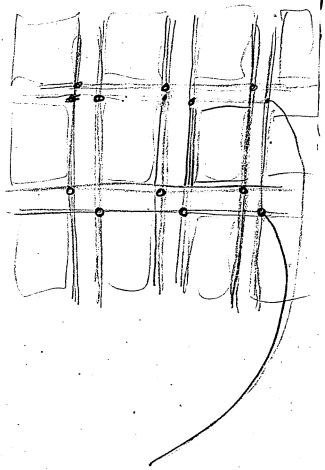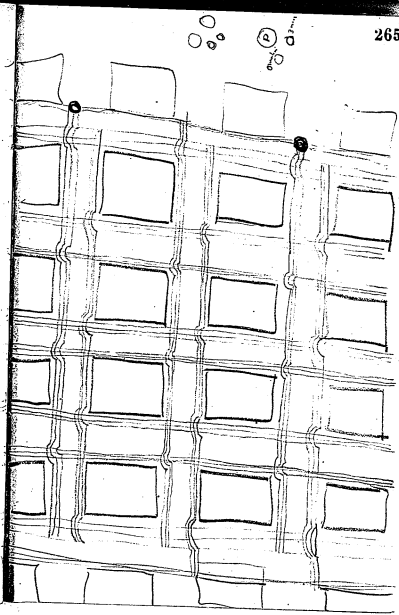
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